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THE LANCET

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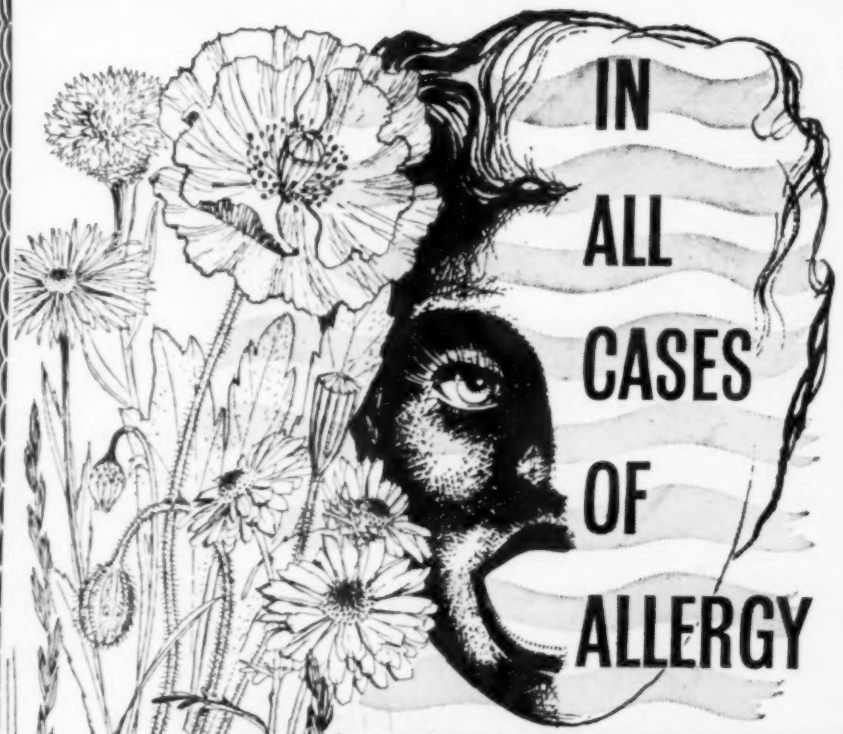

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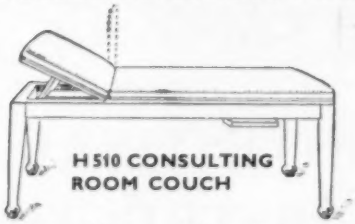

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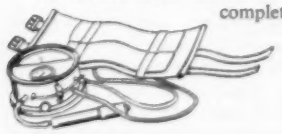

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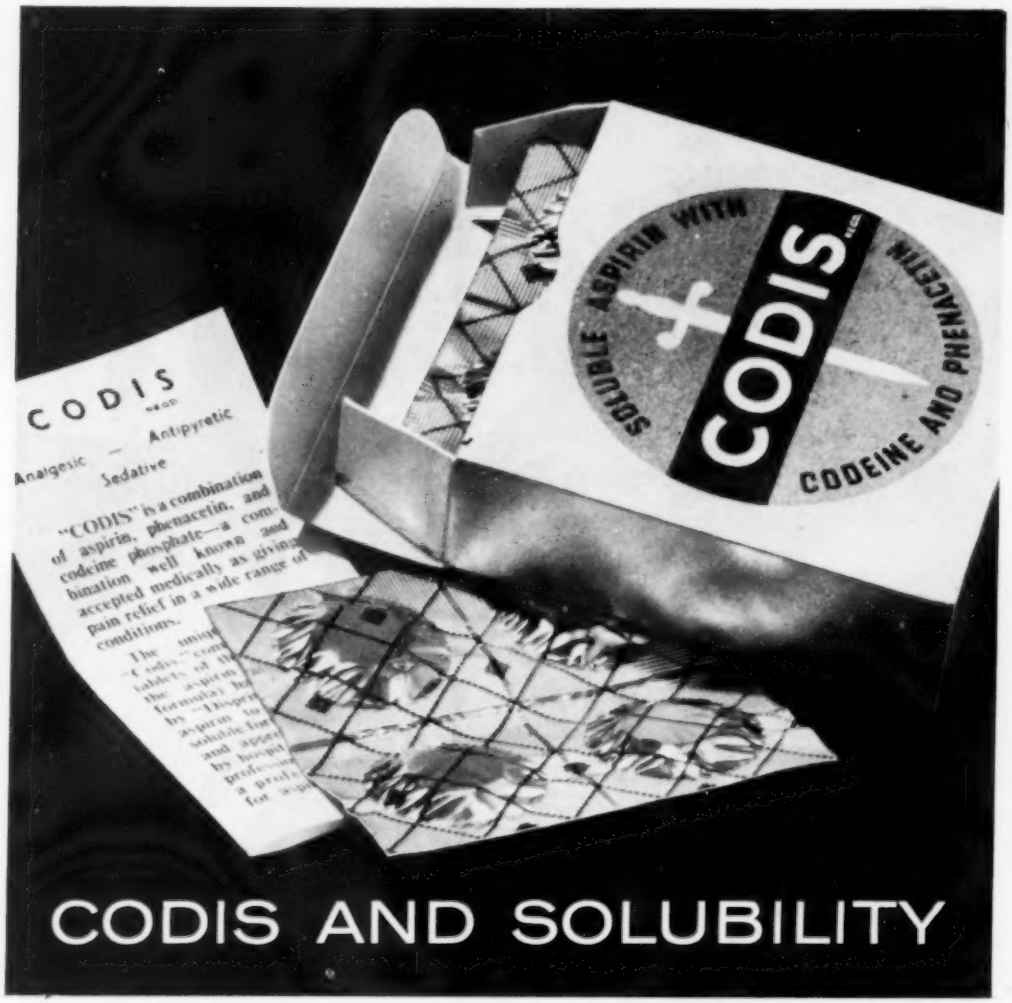
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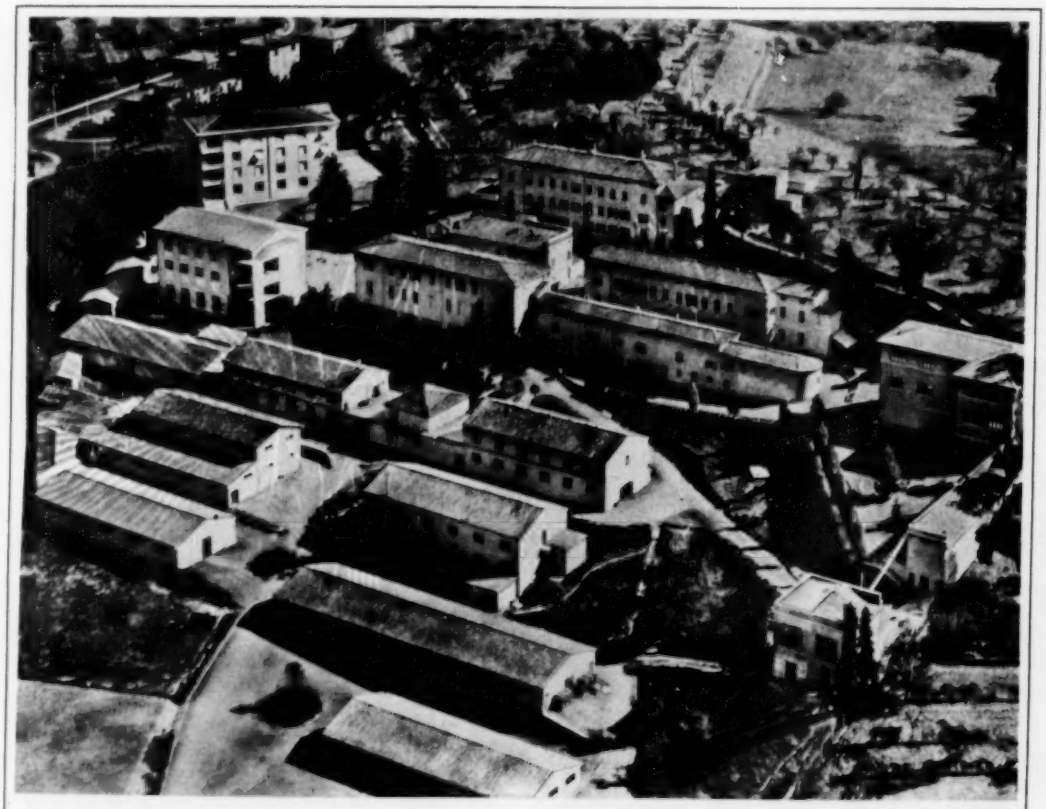

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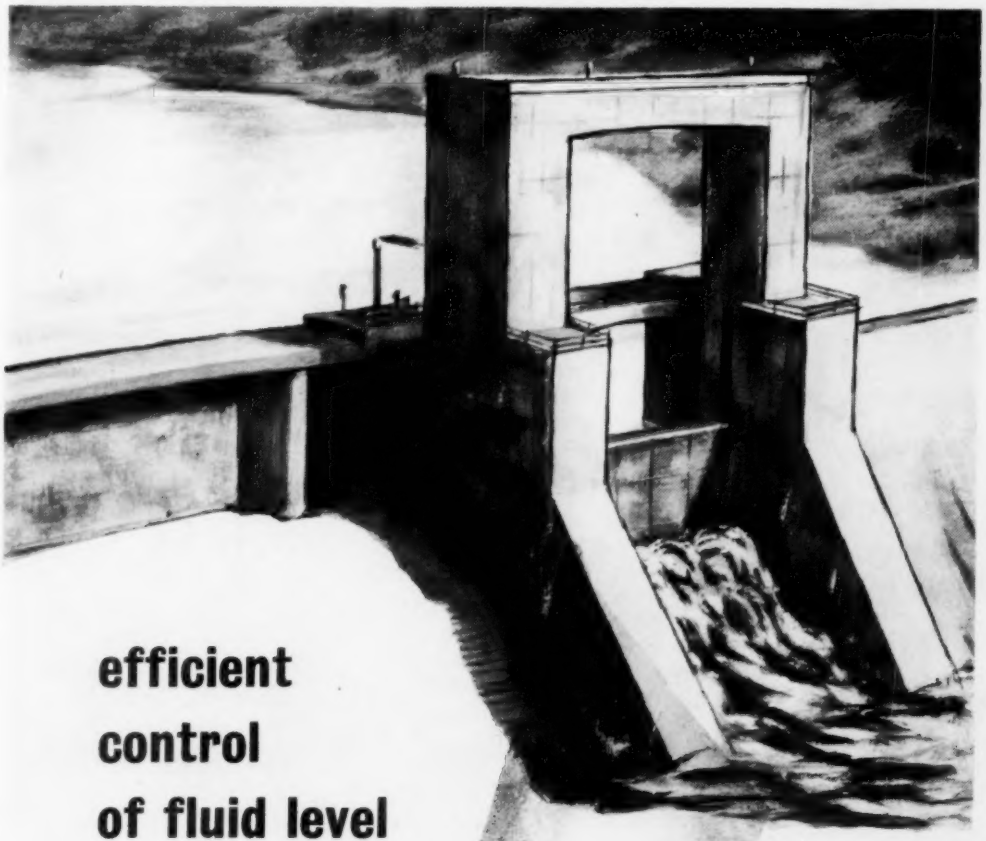

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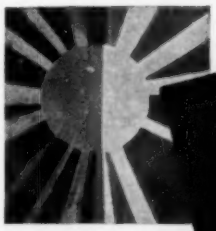

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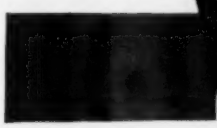

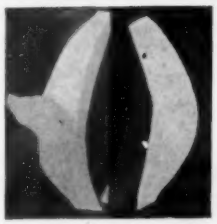

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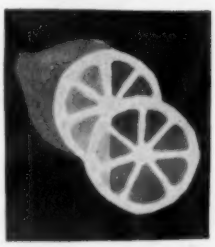

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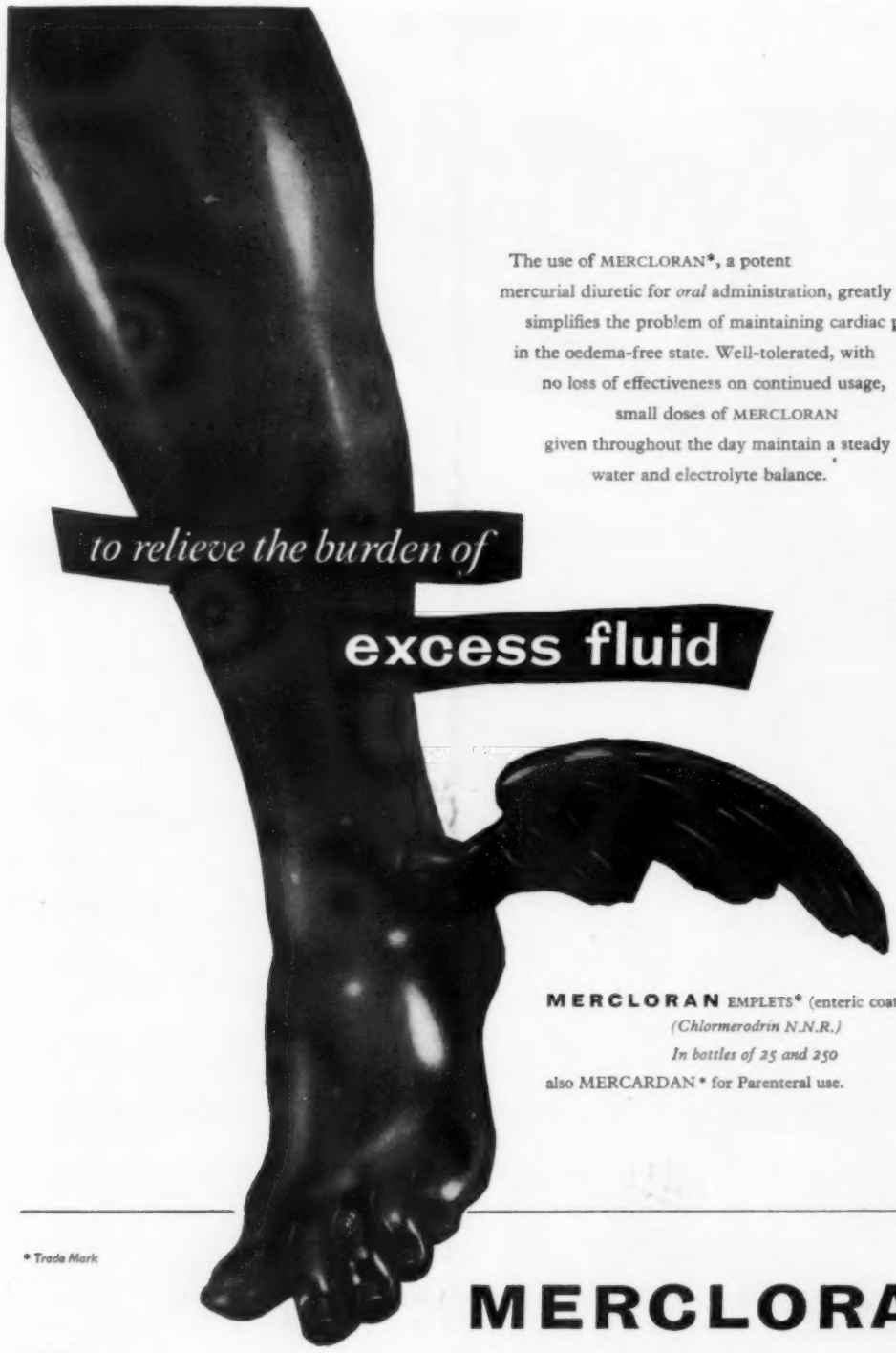

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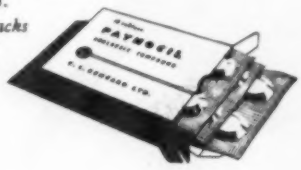

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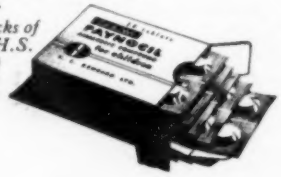

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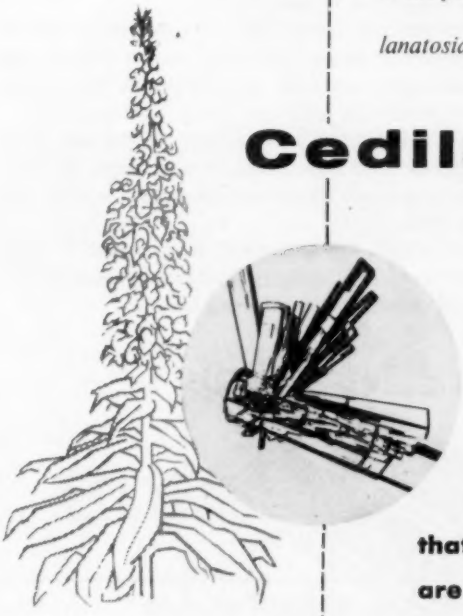

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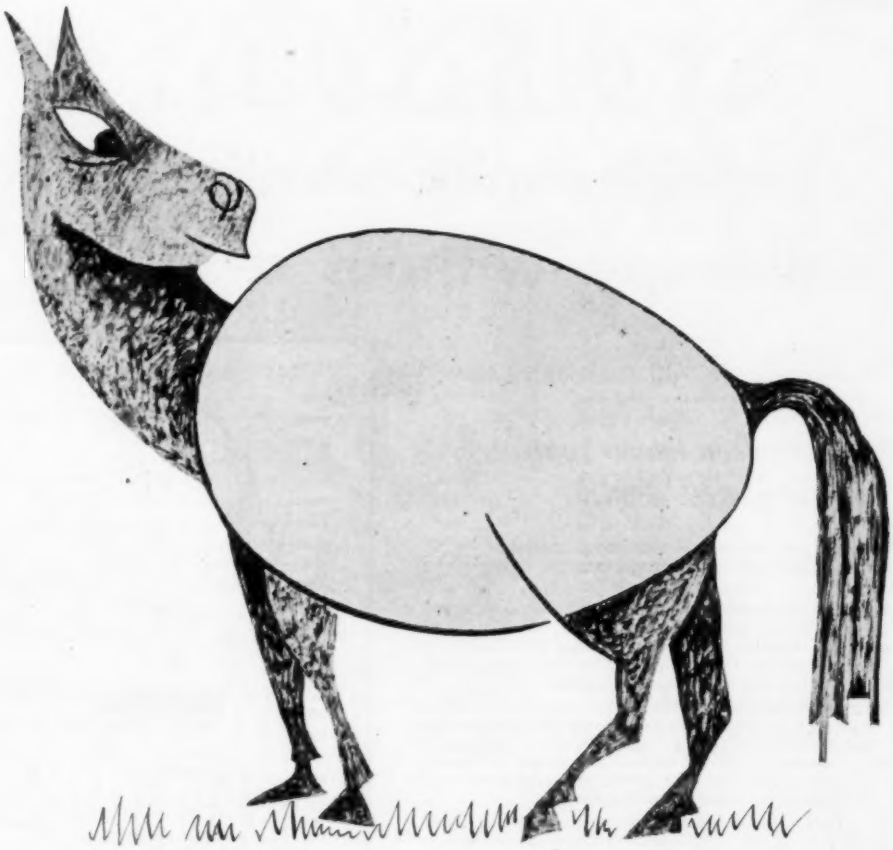

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Maintains continuous control of gastric acidity

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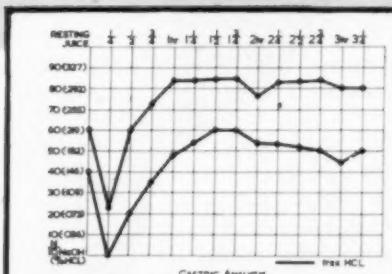
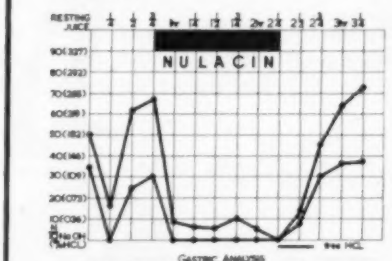


GASTRIC ANALYSIS *Superimposed gruel fractional test-meal curves of five cases of duodenal ulcer.*



GASTRIC ANALYSIS *Same patients as in Fig. 1, two days later, showing the striking neutralizing effect of sucking Nulacin tablets (3 an hour). Note the return of acidity when Nulacin is discontinued.*

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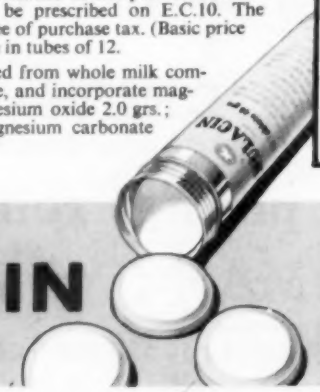
Amer. J. Gastro. 1956, **26:** 665
Brit. Med. J. 1954, **1:** 46

Further references to the literature and full information on Nulacin available on request.



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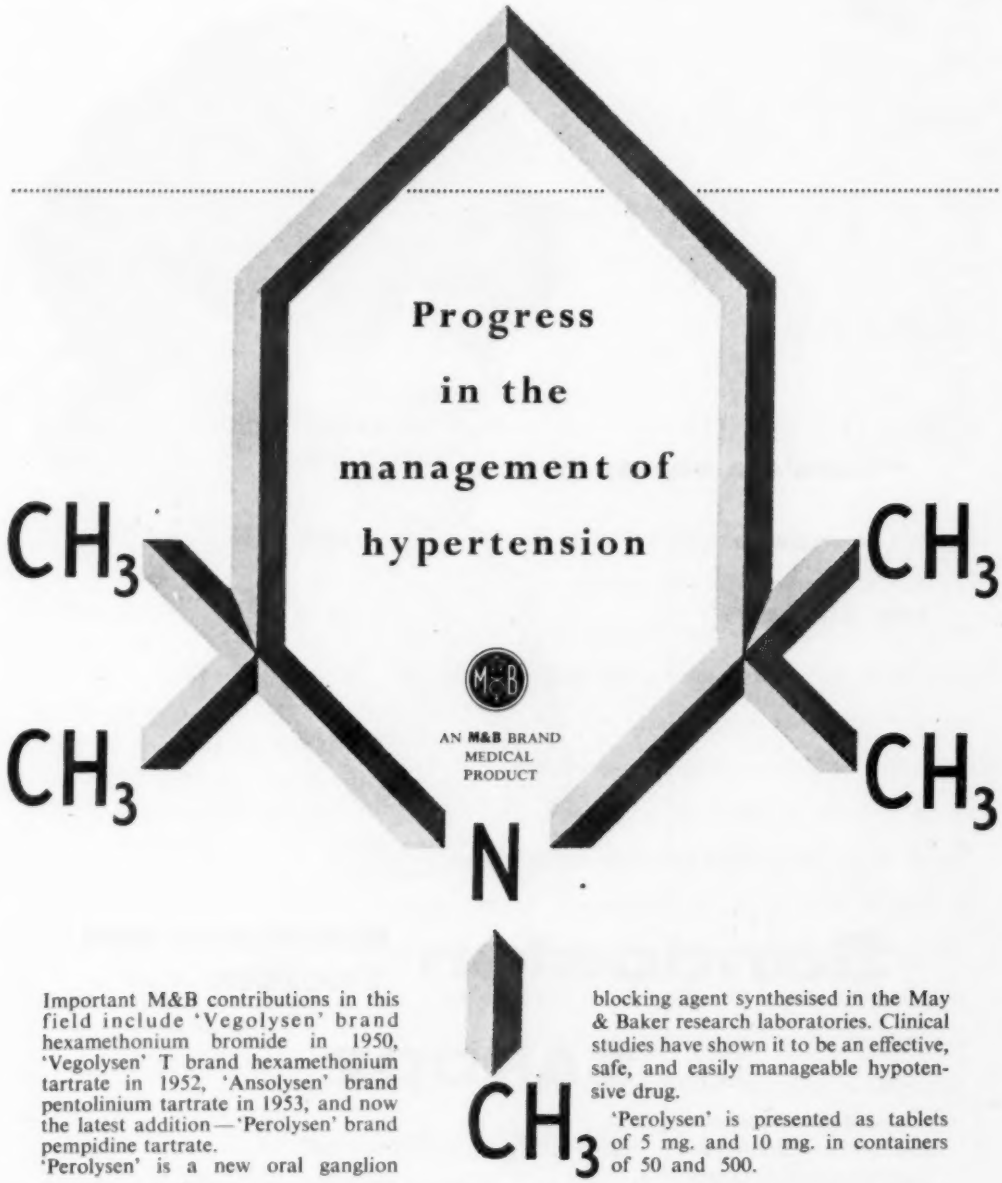

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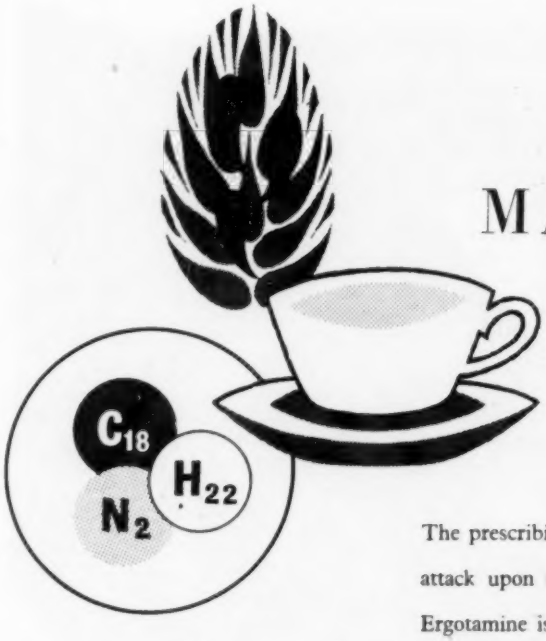

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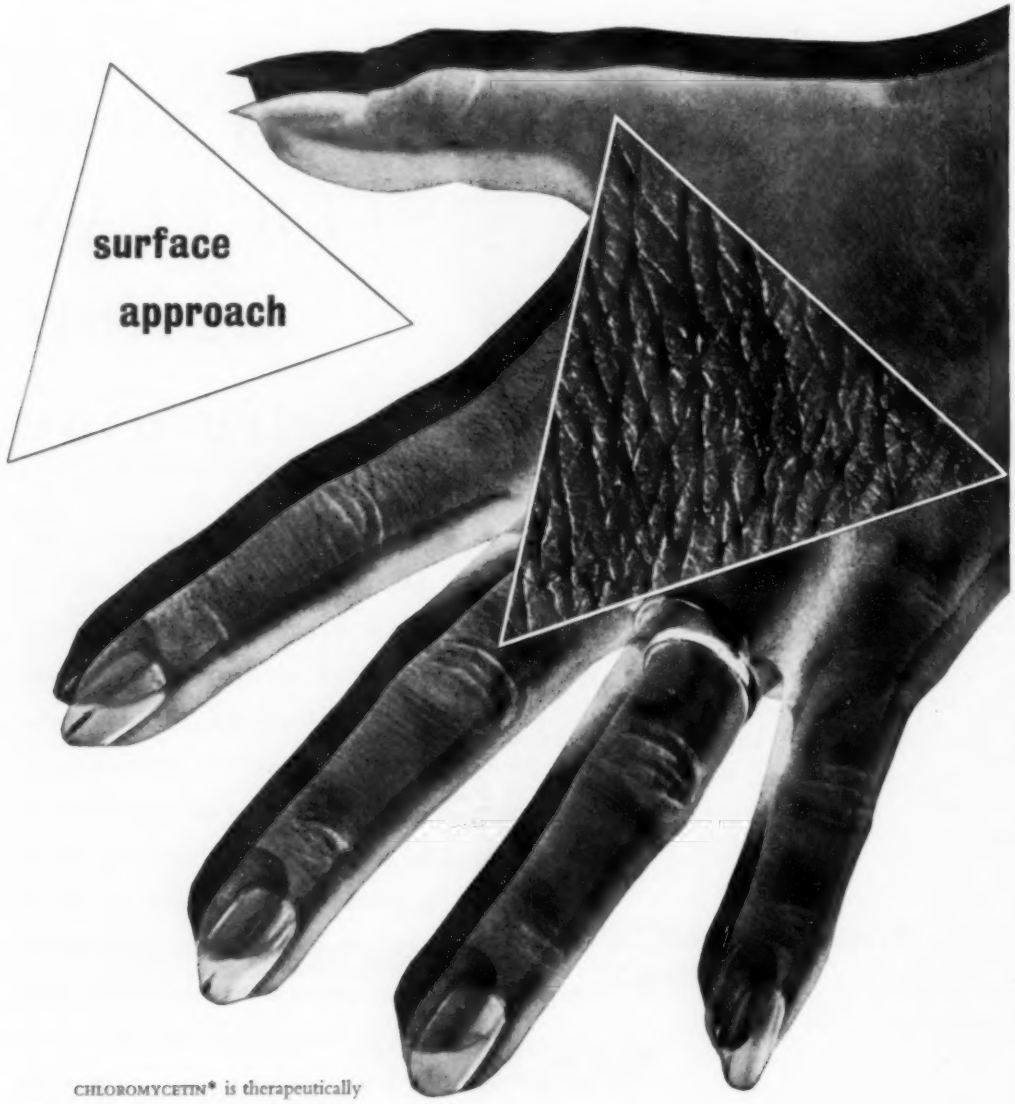

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224

THE PLACE OF THE RESEARCH INSTITUTE IN THE ADVANCE OF MEDICINE *

Sir CHARLES HARINGTON
Sc.D. Cantab., F.R.S.
DIRECTOR OF THE NATIONAL INSTITUTE FOR MEDICAL RESEARCH, LONDON, N.W.7

A SCIENTIST of the present day who is prepared to extend his thought beyond the range of his own activities, or even his own subject, to such matters as the general impact of scientific work on civilised human life will be likely to find himself with mixed feelings. On the one hand he will be filled with pride in the achievements of science and the benefits that its applications have brought; on the other he will feel some qualms about the attendant dangers. The dangers that I am thinking of are not the obvious risks of misuse of scientific potential for destructive purposes, but the more subtle dangers that are inherent in the undue dominance of any particular intellectual discipline over the trend of human thought.

As the achievements of science become more striking and as their impact on the practical affairs of daily life become more manifest, it is inevitable that a feeling should develop that the powers of science are limitless. Such a misconception is likely of course to prevail mostly among those who are uninstructed in science, but in so far as it exists it is bound also to have some effect on scientists themselves. For both the result will be harmful: the scientists will tend to lose that degree of intellectual humility which is necessary for sincere scientific effort, whilst, for the non-scientific, science will become invested with an aura of mystery that might in the end confer on it a dominance over thought as restrictive as any of the religious systems have been in the past.

The avoidance of such a state of affairs must depend on an increasing knowledge of science on the part of those not actually engaged in its pursuit. Only from such a dissemination of knowledge can come a rational view of science which will dispel mystique and bring about a general appreciation not only of the powers of science but of its limitations, together with a recognition of what scientific work has become today—namely, one of the learned professions.

These remarks may seem to be as obvious as their relevance to my present theme is obscure. The point that I am particularly seeking to emphasise, however, is the importance of recognising the extent to which scientific work of all kinds has become professionalised. For all professions imply organisation, and it is one aspect of organisation in one branch of scientific work that I have undertaken to discuss.

Organisation and Restraint

There will be many people who will feel some reluctance to admit the necessity of organisation for scientific work, particularly so far as basic research is concerned. Whilst there can be no denial of the necessity for a high degree of organisation in scientific industry and in what is commonly regarded as applied and development research, it may well be felt that original investigation must remain a purely individual intellectual activity that can only be properly pursued in conditions of complete freedom, inconsistent with any form of organisation.

Though it is still true that there are some people of rare intellectual quality who are so irked by all forms of restraint that they can produce their best efforts only when their thoughts are untrammelled by any considerations other than the pursuit of knowledge, these are in my opinion very few in number. The feeling to which I have referred is based I believe on a nostalgia for the time when the body of scientific knowledge was such that one branch at least could be fully comprehended by an individual, when techniques were simple and when the practical applications of scientific research were less urgently sought after. This time is past beyond recall; as scientists we are no more entitled than anyone else to eat our cake and have it, and if we desire our profession to make its proper contribution to civilisation we must accept the conditions imposed by the more highly organised society in which we have to live.

A further consideration is that as time goes on the importance of the work of any one person in the total scientific effort inevitably becomes less. The reasons for this change are obvious. As the body of scientific knowledge grows the portion that can fall within the comprehension of any one man becomes less, and even within the field that he himself has mastered his efforts will be more and more conditioned by the work of those who have preceded him. This may sound like a denial of the importance of originality; it is, of course, far from being so: there can never be enough originality; but with the passage of time evidence of originality is more likely to be found in the perception of hitherto unobserved correlations of knowledge than in the conception of entirely new ideas.

If it be accepted that the profession of science cannot dispense with an organisation there remains much room for discussion as to the type of organisation best suited to its particular requirements. It is evident at once that, especially when we come to consider original investigation, the question is not easy to answer; for in respect of this particular type of scientific activity—and it is the activity on which in the last analysis all else depends—what we have to seek is an organisation that combines the two apparently opposing characteristics of high efficiency and minimum restraint. The fact that this opposition exists is inherent in the present state of development of human beings who can still not work together efficiently in the absence of some measure of control; the less such control is imposed by authority and the more it can be replaced by the willing acceptance, if not the self-imposition, of a system of organisation the better; it seems to me that this consideration should be constantly in the minds of those whose duty it is to try to organise scientific work. After all, anarchy is not synonymous with chaos, and however unrealistic the conception may at present be there could be worse ideals for the scientific profession, and indeed other professions dependent on the free play of intellect, than the ultimate approximation to a system in which order coexists with anarchy.

However, such flights of fancy are ill suited to the servant of a Government organisation, and in any case the situation that faces us now and will face us for many years to come has to be considered on a practical basis.

* The Linacre lecture, delivered in the University of Cambridge on May 6, 1958.

The Roots of Medical Research

So far I have spoken of scientific research in general; I now wish to narrow the discussion to the field of medical research as practised today and as likely to develop in the future. Such a restriction does not imply any essential difference between medical research and other forms of scientific investigation; the advance of all forms depends on a sincere desire for increasing knowledge. It is platitudinous nowadays to remark that in medical research the new light may come at the one end of the scale from laboratory studies of an apparently academic character and at the other from observation at the bedside. The motivation of the medical research-worker may indeed be more complex than that of other scientists, because few even of those who work only in laboratories are not influenced from time to time by the thought that their efforts are ultimately directed to the prevention and cure of illness. The emotional factor thus introduced may clearly work for good or ill: it is good in so far as it inspires enthusiasm and gives direction to a man's efforts, and bad in that it may remove objectivity and lead to undue haste for practical results.

So far as this country is concerned, medical research, like other forms of original scientific work, has its roots in the universities, if this term is understood to include the great centres of clinical teaching; and if we think of the outstanding medical men of the past who have made major discoveries as practising clinicians we have no reason to belittle the contribution that has come from this source. It is quite vital to the intellectual life of any country that the universities should retain the place that they have hitherto occupied in the vanguard of thought, and in science this means not only inspiration in teaching but also activity in investigation; no-one is likely to dispute this, but differences of opinion may arise on the extent to which basic research in medicine should be pursued outside universities and medical schools. Assuming what is indeed a self-evident fact, that without very great expansion of their resources the universities could not attempt to cover the whole field of basic research in medicine or indeed in any other scientific subject, is it better to extend university resources or to make independent provision of a different character?

The First Institute for Medical Research

The conviction that something more than the universities and medical schools was in fact needed for the advance of medical science took root in the minds of some a considerable time ago, and found expression in the establishment of such institutions as the Koch and Pasteur Institutes and our own Lister Institute. These institutions, however, although broadening the basis of their work as time went on, were set up in the first instance with somewhat closely defined terms of reference, chiefly related to prevention and treatment of infective disease by inoculation; the first Institute for Medical Research founded for the development of basic research without any restriction on its field of activity was the Rockefeller Institute, and it is relevant to our theme to consider the circumstances that led to its establishment.

The story of these circumstances has been told in the life of John D. Rockefeller, Jr., published a year or two ago by Raymond B. Fosdick, and it reveals a surprising fact—namely, that the notion of a general institute for medical research was first put forward by a man who was neither a doctor nor a scientist. It was that astonishing individual Frederick T. Gates, once a Baptist minister, later adviser in business and in philanthropy to the elder Rockefeller, and a man who profoundly influenced John D. Rockefeller, Jr., who conceived the idea, and devoted all his missionary fervour to obtaining its acceptance.

When Gates was seeking for ideas to suggest to Mr. Rockefeller senior for the distribution of his rapidly increasing fortune he happened to read Osler's *Principles and Practice of Medicine*. He records his enjoyment in reading the work, which he describes as one of the few scientific books possessed of literary attraction. In spite of the æsthetic satisfaction that he derived from his perusal, however, Gates was left at the end with a sense of disillusionment; if this book were the best presentation that could be made of medicine, how backward must be the scientific study of the subject, particularly in the United States at that period.

Convinced that something was urgently needed to remedy this state of affairs, and recalling the success in their limited fields already achieved by the Koch Institute in Berlin and the Pasteur Institute in Paris, Gates submitted a memorandum to John D. Rockefeller proposing that the latter should set up an institute for medical research. No suggestion was made that the activities of the institute should be restricted to any definite lines; indeed the breadth of Gates' conception was surprising for a man with no knowledge of scientific work, as is shown by the key sentence of his memorandum: "Medicine can hardly hope to become a science until it can be endowed, and qualified men enabled to give themselves to uninterrupted study and investigation, on ample salary, entirely independent of practice." This was written in 1897.

Since the Rockefeller Institute was to afford the first demonstration of the role that such an organisation could play in medical research, it was well that the underlying idea of its establishment was so liberal; it was even more fortunate that the medical scientists, in particular William H. Welch, who were consulted about the practical implementation of Gates' ideas were themselves men of wide vision who had the authority to insist that the work of the institute must be kept on a broad scientific basis, and must by no means be regarded as aiming at quick practical results immediately applicable to medical treatment. There can be no doubt that faithful adherence to this conception of the purpose of the organisation was responsible for the great scientific reputation that it quickly built up and has since maintained.

This is not the occasion for a discussion of the achievements in medical science for which workers at the Rockefeller Institute have been responsible. These are matters of world repute, but for the purposes of the present argument their significance lies in the demonstration they afford that, at least in the circumstances prevailing in the United States, the institute played an important part. This part is not confined to the actual scientific achievements, great as these have been, but extends to the impact of the work of the institute on the thought of those in the United States, and indeed in other countries, who were considering the means by which medicine might be most effectively advanced.

The point is of some interest because it is possible in retrospect to be sceptical of the effect that the constitution of the Rockefeller Institute as such had on the scientific output of those who formed its staff in the early years of its existence.

There are two reasons for this. In the first place, at the time when the Rockefeller Institute was set up the interdependence of many different branches of science in the advance of medicine was not in principle recognised as it is today. Secondly, the tendency existing to pursue researches under different headings by parallel and independent lines of approach was reinforced by the constitution of the staff itself. As was natural at the beginning of a new venture, the men who were chosen to lead the various divisions of the institute were scientists of distinction and of established reputation in their own fields; within

the institute they continued to develop their own lines of research largely in independence of their colleagues. Whilst these men undoubtedly benefited by the better facilities that the institute afforded, it is arguable therefore that the same result might have been achieved by improving the conditions of their work as individuals in universities, without bringing them together under one roof.

Birth of the National Institute

However this may be, there can be little doubt that the impressive example of the scientific output of the Rockefeller Institute, and of the Lister Institute in this country as the range of its effort broadened, must have carried great weight with the members of the Medical Research Committee (predecessors of the Medical Research Council) when they were engaged, just before the first world war, in formulating their policy. At any rate one of their first decisions towards the implementation of this policy was to establish centralised laboratories to be staffed by full-time investigators; it was this decision that gave birth to the National Institute for Medical Research. It is noteworthy that no defined limits were set to the scope of the work to be carried out in the centralised laboratories, or indeed to any work to be organised by the Medical Research Committee, other than the broad framework laid down in their general declaration of policy. This declaration contained two key sentences, which I have quoted on previous occasions, but which I shall quote again now because of their immediate relevance to the functions of a research institute in the field of medicine:

> "The object of the research is the extension of medical knowledge with the view of increasing our power of preserving health and preventing or combating disease. But otherwise than that this is to be the guiding aim, the actual field of research is not limited and is to be wide enough to include, so far as may from time to time be found desirable, all researches bearing on health or disease, whether or not such researches have any direct or immediate bearing on any particular disease or group of diseases, provided that they are judged to be useful in promoting the attainment of the above object."

This statement continues to express the policy of the Medical Research Council, so that the evolution of the work of the Council, and particularly of the National Institute for Medical Research which I have to discuss, whether or not it is judged useful in the event, has at least not been inhibited by any undue restrictions.

1920-1958

Although the decision to set up the National Institute was taken before the beginning of the first world war, and certain staff appointments were made at that time, the start of actual work was delayed by the war, and it was not until 1920 that the laboratories could be occupied; the institute has thus been in active operation for nearly forty years. The initial appointments to the staff were made with the idea of bringing together a group of workers who would be able between them to carry out researches in all branches of non-clinical medical research; the same principle continues to operate at the present time. At the outset this meant that the subjects to be represented were physiology and pharmacology, pathology and bacteriology, and chemistry, including biochemistry; in the emphasis that they laid on the latter subjects the Medical Research Council were ahead of their time.

From its very modest beginning, when the total number of people employed must have been well under 100, the institute has grown to its present large size, in which there is a professional (i.e., medically and scientifically qualified) staff of 142 and a total average population, including visiting workers, of about 550. This growth has been a continuous process, although the rate of expansion has naturally varied from time to time, having reached its maximum immediately after the last war. It is important to note that expansion has never been encouraged for its own sake; it has been allowed to take place only when there has been a definite demand for extension of the work in one or other direction. This means that the growth of the institute is in itself a reflection of the broadening in the basis of medical research during the last forty years. Moreover the history of the institution is now long enough to justify an attempt to assess its contribution to the advance of medicine, and thus, taking it as an example, to form some judgment of the wisdom in general of devoting large resources to this particular type of development.

I have no intention of trying to base this assessment on enumeration of the scientific achievements of workers at the institute. I shall only speak of a specific line of investigation in so far as it serves to illustrate the advantages and disadvantages of work within a large research institute. But let us first consider the more general question of planning of research.

Planning of Research

It is important to keep in mind that we are thinking of research which, although it may require the application of the methods of chemistry, physics, and even mathematics, is directed towards a biological objective. None would deny that in the exact sciences it is often possible in advance to define a problem with reasonable precision, to formulate the method of approach, and to reach some approximate idea of the type and number of people who are likely to be required for its solution. In such a case the exercise of forethought in planning may well be rewarded by more rapid and economical attainment of the object. Even here, however, where formal planning undoubtedly has its place, rigidity is at all costs to be avoided: the behaviour of the materials to be employed may be predictable, but that of the research-workers is not, and any system is to be deprecated that will make it less likely for the research-worker to be on the alert for the new incidental observation which may ultimately turn out to be much more important than the project in hand.

This consideration is even more to the point in biological work, where not only is the behaviour of the workers unpredictable but that of the experimental material as well. The complexity of biological material is such, and the variety of the techniques required for its adequate study is so great, that it is impossible at the outset of a major research to foresee the range of work that will have to be covered. Under such conditions formal planning can serve little purpose, and any attempt to apply it is likely to be restrictive and therefore deleterious. On the other hand the protean nature of many biological problems implies that their solution may more readily be achieved by a suitable grouping of workers which can be increased or restricted according to the demands of the work. If certain prerequisites are satisfied, the formation of such useful groupings should be easily brought about within a research institute, and indeed in the ideal case they may be expected to develop spontaneously. The prerequisites are (1) that the institute should be large enough, in the sense that the scientific staff will include men covering a sufficiently wide range of disciplines; (2) that the internal organisation should be flexible; and

(3) that personal relationships are such that members of the staff are willing, for a time at least, to set aside their individual preoccupations in order to collaborate with their colleagues.

The sort of process that I have indicated could be illustrated by the development of several major researches in the National Institute for Medical Research. I shall choose for my present purpose research on viruses, partly because this has been one of the more important activities of the institute throughout its history.

Administrative Division but Working Contact

At the outset, when very little was known of the nature of viruses, their study was naturally regarded as an extension of bacteriology, and the first to undertake the work were men whose training had been in bacteriology and experimental pathology. Owing to the peculiar properties of viruses, however, and in particular to their small size, existing technical methods soon proved inadequate, and the group was supplemented by optical research-workers who increased the range of microscopy by developing the use of ultraviolet light, and by a physical chemist who devised methods of estimating the size of viruses by the use of filtration membranes of graded porosity.

Up to this stage the total scientific staff of the institute was still so small that it could be regarded as a single group, and there was no very clear demarcation into divisions. Under these circumstances the physicists and chemists who joined in the virus researches could pursue their own interests, at the same time participating in the special work of the virus group. By the time that the next major technical advance capable of contributing to virus research became available—namely, electron microscopy—the increasing size of the institute had necessitated its organisation into a number of divisions for administrative purposes. The fact, however, that the responsibility for electron microscopy as a technique naturally fell to the division of biophysics did not in any way interfere with the fullest application of the method to the work of the division of virus research; on the contrary it encouraged the closest link between the two divisions, and this link has proved to be of much mutual benefit. Similarly the period during which research on viruses has reached its present high state of development has also been the period that has seen the most rapid growth of biochemistry, particularly the descriptive and dynamic biochemistry of the cell. The application of biochemical thought and technique to virus research has not been neglected and is rapidly growing in importance. Here again is the basis for the links that have been formed in the institute between the division of virus research and those of chemistry and biochemistry.

Virus research, then, in the particular institute that I am dealing with, involves the activities of many people. The nucleus of the work is in the hands of the members of the division of virus research itself; these are men and women whose interest in viruses is primarily biological and medical; in so far as an organised team exists, they constitute the team. In a subject of this sort, however, as in many other branches of medical research, the fringes of the effort may often turn out to be the growing points, and these potentially important fringes are studied, as opportunity offers, with the aid of workers in other relevant disciplines whose own primary interests may lie in quite different directions. In my opinion the attempt to achieve effective working arrangements of this kind should be the principal aim of those who are responsible for the organisation of research institutes, because I believe that when they are achieved they constitute a service to scientific research not easily provided in any other sort of institution.

Advantages of an Institute

On a more practical level a great advantage that a large research institute should be able to offer is the provision of the best technical facilities with considerable economy.

The increasing elaboration of technical methods and the consequent increase in the cost of scientific research is only too apparent to all of us; nor is it possible always at the outset of a research programme to forecast accurately the type of equipment that will be required. In a generally well-equipped institute, however, the major pieces of special apparatus will be found in one or other of the divisions where their primary use may happen to lie. It is perfectly possible to have an understanding that, whilst the equipment is provided in the first place for the use of the laboratory where it is situated, it must be made available within reason to any other worker in the institute who finds himself in urgent need of it for the development of his research.

Pooling of resources should ensure that no research-worker is frustrated in his work by lack of adequate technical facilities.

Theoretically, of course, there is no reason why medical research, of the type that I have illustrated by reference to work on viruses, should not be developed as well or better elsewhere than in a research institute. A university with first-class scientific and medical faculties will possess in all a far greater number of talented investigators than any research institute can hope to gather within its walls. Similarly the total amount of technical equipment in the university will be greater. The claim of the research institute to be able to render a unique service in medical research must rest therefore on the demonstration that it has some special quality which a collection of university departments cannot provide, however high may be their individual standing.

I believe myself that such a quality does exist and that a basic necessity for its acquisition is the assembly under one roof of a collection of people with widely differing scientific interests but working together with a common sense of purpose. It was said, I think by Alan Gregg, that a prerequisite for effective collaboration in research is that you should not have to put on your hat when you go to see the man you want to talk to. There is certainly much truth in this, but there is an equally important requirement, which is that the man you consult should be ready to listen. It is certainly much easier to develop an atmosphere in which effective mutual consultation can take place within a research institute than it can ever be in a university.

Indeed, paradoxical as it may seem at first sight, the better the quality of individual university departments, the less easy may mutual consultation between their workers become; for high scientific quality in a university department tends to be associated with intense preoccupation with the subjects of investigation and a corresponding reluctance to divert intellectual effort to the problems of others; moreover it will inspire personal affection for and loyalty to the department itself rather than to the larger institution of which it is a part. Furthermore, even given the utmost degree of friendliness and good will, the position of a member of one department entering another as a guest to make use of its valuable equipment can never be easy.

Conditions of Success

Within a large research institute the divisions will of course correspond in a sense to the departments of a

university faculty, and the head of a division, if he has, as he ought to have, some qualities of leadership, will naturally do his best to see that the standard of work in the laboratories under his care is as high as he can make it. On the other hand the essence of academic work is the pursuit of knowledge for its own sake without regard to practical issues; the essence of work in a research institute is pursuit of knowledge with the greatest degree of intellectual freedom that is consistent with mindfulness of the objects for which the institution was established. The difference, though subtle, is very real and is profound in its effects; for it will mean, if the spirit of the institute is as it should be, that the subjects for research in the different divisions are chosen not only for their own interest but for their potential contribution to the common effort. This in its turn will mean that the loyalties of the workers will be to the institution as a whole rather than to their local habitation within it, and thus may be prevented the growth of barriers that would otherwise form between groups of investigators with differing interests.

It goes without saying that the state of affairs that I have indicated as being desirable, and indeed in my opinion essential, if a research institute is to make its proper contribution, does not come about automatically. The mere assembly under one roof of a number of able people, covering between them the required range of disciplines, is but the first small step. I have, indeed, ventured to criticise the Rockefeller Institute in its early days for the very reason that the effort put into its establishment, magnificently successful as it was in collecting men of talent, seems to have stopped at that point. Very positive action is required to carry matters further, and the responsibility for this rests on those who are called upon to direct research institutes.

I have already mentioned three prerequisites for success —namely, sufficient range of scientific competence, a flexible organisation governed by a liberal policy, and good personal relationships. The first and second of these depend on the employing organisation and the director working together, the third on the measure of success that the director may achieve in gaining the confidence of his colleagues. Even though these basic requirements are reasonably fulfilled, the need for constant vigilance remains. The tendency for groups of people with different intellectual interests to segregate from one another is always strong and must at all costs be combated within a research institute; the most effective weapon against this tendency is the development of researches involving many people with different outlooks and different approaches to the problem. Over and above this it is essential to preserve an atmosphere in which any member of the staff feels free to seek the help of any of his colleagues, and in which everything possible is done—by means of colloquia, open days, and any other available means—to spread knowledge of and interest in the work of individual laboratories through the institute as a whole. When all has been done by authority that can be done the happiness of any individual member of the staff and his usefulness depend on himself. In a large and active institute with a free atmosphere the opportunities for intellectual stimulation lie to his hand and it is for him to use them if he will. He can gain so much by varying his companions at the luncheon table and in the coffee room; he can lose so much by making no contacts outside his immediate associates.

Objections to Institutes

Having discussed some of the advantages that can, under the right conditions, be provided by research institutes, giving them a useful place in medical research, I must now consider some of the criticisms that are levelled at institutions of this kind—criticisms that are neither infrequent nor lacking in vigour.

I have already mentioned some of the dangers and difficulties inherent in research institutes, of which I have become conscious from my personal experience; but the criticisms that are commonly made from outside are of a somewhat different character. These criticisms are to some extent mutually contradictory; thus the academically minded critic finds it hard to believe that the higher flights of scientific investigation can be attained within an organisation that is subject to any sort of restriction or limitation of objective, whilst the practically minded critic sees the research institute as a hothouse for the development of the ivory-tower mentality. Again, it is said on the one hand that the staff of a research institute tends to be static and therefore inevitably to accumulate dead wood; on the other that by offering a sheltered existence with no distractions from research the institute drains the limited pool of talent of people who would be better employed in universities. These contradictions do not however, necessarily deprive the criticisms of substance, and they must be examined.

The answer to the extreme academic objection that original investigation can flourish only in conditions of complete academic freedom is a simple one; it is contained in the record of major scientific discoveries that have come from medical research institutes in this and other countries. This statement is not merely a matter of personal opinion; it is substantiated by the opinion of the scientific community as shown by the recognition of workers in medical research institutes, internationally by the award of Nobel prizes, in this country by election to the Royal Society, and in other countries by analogous distinctions. In the light of this record it is manifestly untrue to maintain that the atmosphere of a research institute is necessarily less encouraging to original thought than that of a university.

The contrary argument that work in a research institute leads to loss of contact with reality has more cogency. If we accept the view that the maximum of intellectual freedom is an essential feature of a satisfactory institute, such an institute will attract the type of person capable of original thought, and we cannot be surprised that some workers placed in an atmosphere of this kind will become engrossed in the pursuit of their own ideas and will become totally uninterested in any practical application of their work. This must be accepted as a risk inherent in the research-institute system; the lack of practical interest on the part of the worker himself can be countered by increased watchfulness on the part of the head of his division and the director; nor must we forget that even if there should be no perceivable practical outcome of the work, this may nevertheless constitute a scientific advance intrinsically worth having.

The questions of the effect of life in a research institute on the staff, and of the competitive requirements for scientific staff of research institutes and university departments, are best taken together. It is not to be denied that a danger of stagnation exists for the scientific staff of a research institute; but much can be done to combat this danger. It is also true that university departments and research institutes must draw on the same pool of

talent; but here again it is possible to adopt a mutually helpful policy rather than to indulge in cut-throat competition.

The danger of stagnation can be partly dealt with at the earliest stage by the conditions of employment. It will be generally admitted that a career of scientific research is the least predictable of all careers: for the young man setting out on it, it is an adventure, and for his employers a speculation. It is therefore surely fair and reasonable that junior workers in research institutes should be employed on short-term appointments of three to five years until it is apparent that they have chosen the work for which they are fitted. If this proves not to be so, there is then still time for them to start another career.

Stagnation of a more serious character can occur at a later stage. It is a mistake to regard work in a research institute as a sheltered and unexacting occupation. Economically sheltered it may be, but it can be far more exacting psychologically than many apparently more arduous forms of work. This is often not apparent to an individual worker for a number of years; while his mind is most active he will welcome the unparalleled opportunity that a research institute can offer for the pursuit of his own research without any other responsibility. For many men, however, and indeed in my experience for most, there comes a time when the satisfaction to be obtained from their own efforts ceases to be enough. This time is critical; if a real sense of inadequacy and frustration is allowed to develop a good man may be lost, ceasing to be a useful member of the research institute, and at the same time having no heart for any other job.

Here again there are ways in which this danger that besets research institutes can be met. It does not follow that because a research-worker in early middle age has lost his desire to pursue research at the expense of all other activities he has therefore lost his usefulness. On the contrary he may well have acquired other qualities of experience and judgment, and the capacity for imparting knowledge, that increase his potential value to society if the right work can be found for him. Sometimes the problem can be solved within the research institute itself, if there exist official duties in which he can be given a share; more often, however, it is better for him to move elsewhere, and it is in this connection that ease of transfer from the staffs of research institutes to those of universities becomes so important.

If such a transfer is to take place it is obviously only by good fortune that it can occur at the optimum moment both for the research institute and the university. Since it is on the universities that the supply of future research-workers must depend, it seems to me self-evident that when there is an apparent conflict of interest the claim of the university must come first. No research director in his senses would wish to compete with a university for the services of a man who would obviously make a good professor, even though he may still be a most valuable member of his scientific staff; on the contrary, if he is wise, he will encourage such a man to seize his new opportunity whilst he has full vigour to make use of it. What I have just said is based not on armchair theory but on practical experience. There are about twenty university professors of medical subjects, now or previously in office, in universities in this country and the Dominions, as well as several readers, who have earlier served as members of the staff of the National Institute for Medical Research. In no case was any attempt made to dissuade the man from taking the university post; in no case did a man leave the institute worn out by his research and seeking only to subside into his professorial chair. On the contrary, all these men have continued to be active investigators and by the quality of their departments they have made their full contribution to university life. This is part of the record of the National Institute for Medical Research in which I personally feel great pride.

The research institute, I believe, not only has a part to play in medicine as an efficient instrument for the advance of knowledge, but so far from being in destructive competition with universities, can complement their efforts, and may even have the good fortune to serve as a nursery for first-class heads of university departments. The claim that the research institute can make a unique contribution rests on the assumption that its total effort will be more productive than would be the sum of the efforts of its constituent parts were these not welded into a closely knit scientific community. I have tried to show how this claim can be substantiated, and at the same time I have been at some pains to point out the dangers to which research institutes are exposed and the conditions that are necessary for success. The pitfalls are many and the frequency with which we fall into them is high; nevertheless the rewards of success when it does come are so great that the effort to maintain and develop institutes for medical research can surely be regarded as worthy of human endeavour.

Two Unsolved Problems

Before I end there are two major unsolved problems which I must mention. All that I have said refers to institutes concerned with laboratory research only. We are, however, considering the place of the research institute within the framework of medicine as a whole. If we agree that the laboratory research institute has its function and can under the right conditions be of great value, the question arises as to whether this value would be much enhanced by a close association with clinical work. This brings in its train the second question, which is whether a strengthening of clinical research, similar to that achieved on the laboratory side, could be effected by the establishment of clinical research institutes.

These two questions are far too large to be discussed at this juncture. On the first I would only say that no-one who works in a laboratory institute for medical research can fail to be conscious of a defect in the present system. It is indeed possible to ensure that discoveries made in the laboratory that have practical application are promptly brought into the right hands so that they may be properly applied; on the other hand it happens not infrequently that a research started as a laboratory investigation develops in such a way that observations on patients become desirable both from a scientific point of view and in order to study the application of the work to treatment of disease. With all possible good will on both sides, the establishment of a fruitful laboratory-clinical collaboration at a distance offers formidable difficulties, and in the event frustration and loss of effort can undoubtedly result. For this and other reasons it is tempting to suppose that a closer association of laboratory research units and clinical work would be advantageous, certainly to the laboratory workers and perhaps to the clinical investigators.

It is tempting further to assume that the advantages would be enhanced if the association were with an institute for clinical research covering many different branches of medicine. The success that has already been achieved by the United States National Institutes of

Health points indeed in this direction. It does not follow, however, that an organisation appropriate to the special circumstances prevailing in the United States will necessarily succeed in other countries, and it seems to me that the question of the feasibility and usefulness of institutes for clinical research in general remains open. Nevertheless I would like to end my lecture leaving this question in your minds. It is at least worth thinking about. For if the answer is yes, we might, by forming institutes for clinical research and associating or combining them with laboratory research institutes, forge weapons for the advance of medical science more powerful than any that we now possess.

EXPERIMENTAL PRODUCTION OF ENDOMYOCARDIAL FIBROSIS

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THE term "endomyocardial fibrosis" describes structural derangements of uncertain ætiology. As Brigden (1957) points out, minor degrees of such derangements are common in many of the chronic forms of myocardial disease, but they are generally thought to be essentially different from the great endocardial thickening which appears to be the result of a specific disease particularly rife in Africa. Typical cases of endomyocardial fibrosis are common in Uganda (Ball et al. 1955, Davies and Ball 1955), the Sudan (O'Brien 1954), and Eastern Nigeria, where allegedly 40% of the patients with heart-disease admitted to hospital have endomyocardial fibrosis (Nwokolo 1956). However, the disease is likewise not unusual in the Middle East (Bedford and Konstam 1946), and it has occasionally been observed in the United Kingdom (Hughes and Smith 1953, Evans 1949), the United States (Thomas et al. 1954, Elster et al. 1955, Hoffman et al. 1955), Switzerland (Loeffler 1936), and other countries. The subject has been reviewed at some length by Gray (1951 and by *The Lancet* (1952).

Stemmermann (1957) described a malady under the name of "idiopathic endomyocardial necrosis" which he believed to be related to the typical endomyocardial fibrosis. In his patient the cardiac lesions were associated with extensive morbid changes in the pancreas. Stemmermann also obtained material, from twelve additional cases, through the Armed Forces Institute of Pathology (Washington, D.C.), and noted that in seven of these there were pancreatic lesions—especially, focal necrosis of acinar tissue and necrosis of fat. Sometimes the pancreatic ducts were plugged with secretion and pancreatitis developed. Stemmermann concluded that "the basic pattern of the pancreatic changes fits into the framework of the general adaptation syndrome".

Since the causal agent has never been identified, it is not certain that endomyocardial fibrosis is always a manifestation of the same disease, nor can it be proved that subendocardial necrosis represents an early stage of endomyocardial fibrosis. Most investigators believe that endomyocardial fibrosis is due to some infection or nutritional deficiency, but this has not been proved, and Stemmermann (1957) expressed the opinion that, under certain conditions, any stressor agent could produce such myocardial lesions.

Our interest in this lesion was aroused by the observation that, in various species of laboratory animals, predominantly subendocardial necroses can be produced at will by conjoint treatment with steroids and sodium salts. This so-called electrolyte-steroid-cardiopathy characterized by necroses (E.S.C.N.) is sometimes accompanied by focal pancreatic necroses and pancreatitis (de Salcedo and Selye 1957).

The experimental production and prevention of the E.S.C.N. have recently been surveyed in a brief review (Selye 1958a) and in an extensive monograph (Selye 1958b). Suffice it therefore to point out here that, after suitable conditioning with corticoids—particularly with the highly potent 2α-methyl-9α-chlorocortisol (Me-Cl-COL)—not only electrolytes but even mere exposure to stress (hot or cold baths, surgical trauma, injections of adrenaline, noradrenaline, vasopressin, and many other drugs) can produce predominantly subendocardial necroses in the heart, and that these can be prevented by the oral administration of KCl or $MgCl_2$.

In view of the great prevalence of endomyocardial fibrosis in certain parts of the world, it seemed of interest to establish whether this disease is related to the E.S.C.N., because, if it is, the successful prevention of the latter by KCl and $MgCl_2$ may be a guide to the nutritional prophylaxis of clinical endomyocardial fibrosis.

Experiments

Materials and Techniques

Forty female Sprague-Dawley rats, with a mean initial bodyweight of 98 g. (range 90–107 g.), were subdivided into four

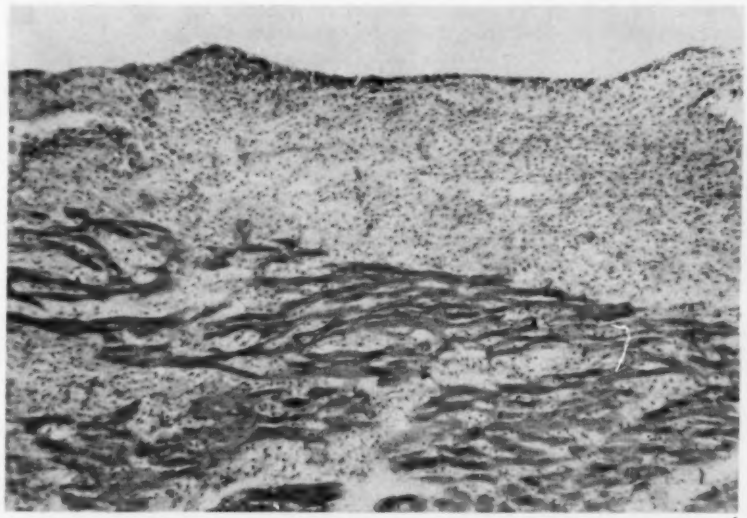

Fig. 1—Thick layer of endocardial fibrosis in wall of left ventricle of a rat in group 2, killed 20 days after transient treatment with Me-Cl-COL + NaH_2PO_4. Note infiltration of fibrous tissue between subendocardial muscle-layers. (Fuchsin. ×75).

Fig. 2—Comparable region of the endocardium of a rat in group 4, showing preservation of normal structure, owing to prophylactic treatment with $MgCl_2$. (Fuchsin. ×75).

equal groups. All the rats were fed exclusively on 'Purina Fox Chow' (Ralston Purina Co.) throughout the period of observation. In addition, during the first 30 days they all received 1% $NaH_2PO_4{\cdot}aH_2O$ as their only drink, and Me-Cl-COL in the form of microcrystals of its acetate, at dose of 50 μg. in 0·2 ml. of water, subcutaneously, once daily. Groups 1 and 2 were not otherwise treated, whereas groups 3 and 4 received, in addition to the Me-Cl-COL+ NaH_2PO_4 treatment, 1 mM. of $MgCl_2{\cdot}a6H_2O$ in 2 ml. of water, twice daily, by stomach tube, during the first 30 days. By the 30th day two animals in group 1 and three in group 2 died with obvious manifestations of E.S.C.N. (extensive and predominantly subendocardial necroses with secondary inflammation). None of the rats in groups 3 and 4 died.

On the 30th day all the treatments were discontinued, and the survivors in groups 1 and 3 were killed. Their hearts were fixed in neutral formalin and stained with our fuchsin technique (Selye 1958b), which shows up early prenecrotic degenerative changes in myocardial muscle-fibres. The intensity of the cardiac lesions was assessed in terms of an arbitrary scale of 0–3, and it was found that on the 30th day the mean intensity of the myocardial necroses was $1{\cdot}5 \pm 0{\cdot}25$ in the rats in group 1, whereas the animals of group 3 (which received the additional $MgCl_2$ treatment) showed no histological evidence of myocardial damage.

20 days later—i.e., 50 days after initiation of the treatment—the rats in groups 2 and 4 were killed, and their hearts were histologically examined by the same technique. The findings in these latter groups represent the principal subject of our study and will be discussed in detail below.

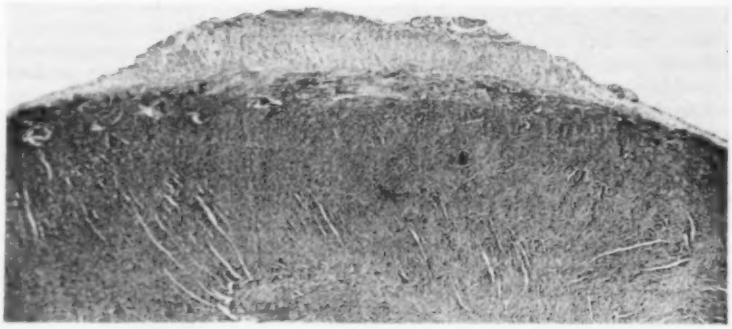

Fig. 4—Circumscribed patch of fibrous pericarditis on the surface of the left ventricle of rat in group 2. Such pericardial lesions are much less common in rats so treated than is endomyocardial fibrosis. (Fuchsin. ×25).

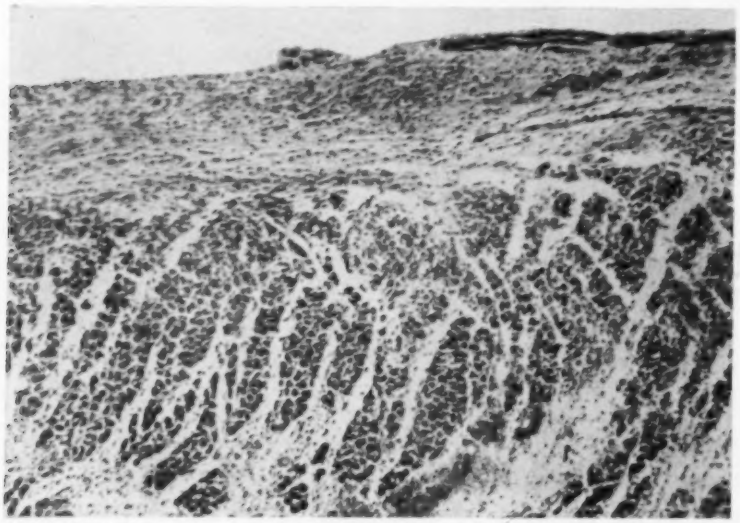

Fig. 3—Particularly severe endomyocardial fibrosis in the wall of the right ventricle of a rat in group 2. (Fuchsin. ×75).

Results

Two of the rats in group 2 exhibited no detectable histological change in the myocardium on the 50th day—i.e., at the end of the 20-day rest period. Apparently here, whatever minor lesions might have been present on the 30th day, when treatment was discontinued, had healed without leaving any permanent scar. However, in all of the remaining eight animals, thick layers of subendocardial fibrosis had developed in those locations where the necroses had been most plentiful in the rats of the corresponding group 1 which were killed immediately after discontinuation of treatment. In some of these rats the endocardial fibrosis was accompanied by patches of pericardial and myocardial fibrosis.

The histological appearance of these changes is illustrated in figs. 1–4. The resemblance between this experimental lesion and the morbid changes found in patients who die of endomyocardial fibrosis is quite striking. In the myocardium of the rats in group 4 no pathological change was detected.

Discussion

It is clear from these experiments that, although small foci of myocardial necroses can disappear after discontinuation of the electrolyte-steroid treatment without leaving a trace, the larger foci of the E.S.C.N. heal by the substitution of dense connective tissue for the dead muscle-fibres. Since the necroses of the E.S.C.N. tend to be localised predominantly in the subendocardial layers, the fibrosis is also most conspicuous in these regions. It is evident, furthermore, that $MgCl_2$ not only prevents the development of the initial myocardial necroses but also forestalls the secondary fibrosis.

We repeated this experiment on rats which received the same treatment with Me-Cl-COL plus NaH_2PO_4 for 30 days. The rats that did not die spontaneously were killed after 30 days; no rest period was allowed in this experiment. The results were essentially the same except that fresh subendocardial necroses and endocardial fibroses often occurred simultaneously in the same heart. $MgCl_2$ again prevented the development of all myocardial changes.

It remains to be seen whether electrolytes and steroids also have a decisive rôle in the development of clinical endomyocardial fibrosis, and whether $MgCl_2$ and other electrolytes that are known to prevent the E.S.C.N. (e.g., KCl) could here be used to advantage as prophylactic agents. Further studies will also be necessary to verify whether a high dietary intake of fats, carbohydrates, and certain Na salts which sensitise laboratory animals for the production of an E.S.C.N. (Selye 1958b), plays a part in the pathogenesis of the structurally similar spontaneous disease of man.

Summary

Experiments on rats indicate that a comparatively brief period of treatment with certain corticoids, such as 2α-methyl-9α-chlorocortisol (Me-Cl-COL), plus Na salts (e.g., NaH_2PO_4), produces myocardial necroses which are predominantly localised in the subendocardial layers. If, in addition to this treatment, $MgCl_2$ is administered, the development of these changes is prevented.

After discontinuation of treatment, the cardiac necroses thus elicited tend to heal by the formation of thick scar tissue, producing a condition resembling endomyocardial fibrosis.

In rats in which these cardiac necroses were prevented by the prophylactic administration of $MgCl_2$ the secondary fibrosis did not develop.

The possible clinical implications of these findings are briefly discussed.

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CONTROL OF GASTRIC AND PANCREATIC SECRETION BY INHIBITION OF CARBONIC ANHYDRASE*

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THE most striking relation between the stomach and the pancreas is the way in which the gastric mucosa secreting an acid solution with a H^+-ion concentration of more than 160 mEq. per litre elicits from the pancreas an alkaline fluid with a corresponding bicarbonate-ion concentration of 150 mEq. per litre or more.

This symmetrical integrated process has an inherent, almost æsthetic, interest; but, beyond this, clinicians have been preoccupied for the last fifty years with either controlling or suppressing this mechanism for their therapeutic ends. Almost the whole of modern treatment of peptic ulcer is an attempt to abolish the stomach's secretion of hydrochloric acid, on the supposition that the ulcer is a localised area of autodigestion of gastrointestinal mucosa by hydrochloric acid.

Almost the whole of therapy in acute inflammation of the pancreas is a similar effort to suppress pancreatic secretion, based on an analogous supposition that this lesion is due to localised autodigestion by pancreatic secretion.

These therapeutic concepts may be wrong, but it still seems desirable to be able to control and thus to suppress the secretions of these digestive glands.

If we leave aside total extirpation of the gastric glands (perhaps the ultimate aim of surgical therapy), the current useful therapeutic agents either neutralise already elaborated acid or else interfere (with variable success) with the nerves which stimulate the gastric glands. A more logical approach would be direct control of the intracellular processes of secretion—inhibition at the source. This is not a priori impossible, since there exist precedents for such intracellular therapeusis—e.g. mercurial inhibition of the renal tubular reabsorption of fluid and solutes in clinical œdema, and probenicid inhibition of the reabsorption of urates in gout.

The studies of gastric and pancreatic carbonic anhydrase which are here reviewed had as their genesis the hope of establishing a safe, efficient, and practical method of controlling these digestive secretions at the cellular level. This hope was not achieved, but the results of these studies indicate that such a chemotherapeutic aim is feasible and give further insight into the complex intracellular processes of digestive secretion.

* The substance of this paper was presented as the MacArthur lecture at the University of Edinburgh on May 31, 1956.

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Inhibition of Gastric Secretion by Inhibition of Gastric Carbonic Anhydrase

Historical

The considerable literature on gastric carbonic anhydrase was reviewed by Davenport (1946a). Here it is only necessary to recall the following points:

Davenport (1939) showed that this zinc-containing enzyme was present in highest concentrations in that part of the gastric mucosa which contained the highest proportion of oxyntic cells. This discovery suggested that carbon dioxide arising in these cells during metabolic processes is hydrated to carbonic acid under the catalytic influence of the enzyme, and that subsequent ionisation of carbonic acid provides hydrogen ions for gastric secretion.

Inhibition of acid secretion in the dog under the influence of thiocyanate appeared to support this suggestion strongly, but Feldberg et al. (1940) showed that sulphanilamide, a more potent carbonic-anhydrase inhibitor than thiocyanate, did not inhibit acid secretion, and Davenport (1946b) withdrew his theory. Yet studies (Davies and Edelman 1951) on the secretion of the isolated amphibian stomach indicated that an external source of bicarbonate was needed, and that carbonic-anhydrase activity was needed to maintain high rates of secretory activity.

This discrepancy between the in-vitro studies and the failure of inhibitors of carbonic anhydrase of the sulphanilamide class to inhibit gastric secretion of acid in vivo was disturbing. Further, Davies and Roughton (1948), on the basis of the relative concentrations of enzyme in red blood-cells—and in gastric mucosa, had concluded that no inhibition in the living animal was to be expected, because the transport of carbon dioxide by the blood would be so seriously affected as to lead to the speedy death of the animal.

Studies with Acetazolamide

Such was this unresolved situation when our interest was stimulated by the synthesis of a series of carbonic anhydrase inhibitors by Roblin and Clapp (1950) searching for more effective diuretic agents. Several heterocyclic sulphonamides were created as carbonic-anhydrase inhibitors. Acetazolamide received most study, but the antisecretory activity of related substances was also explored.

Studies in Animals

Acid secretion was investigated in dogs fitted with vagally denervated (Haidenhain) pouches of the body of the stomach, secreting under the continuous influence of subcutaneous histamine. When intravenous acetazolamide 20–60 mg. per kg. of body-weight was given to these animals, there followed, after 20–80 minutes, a profound fall in the rate of secretion of hydrochloric acid, ranging between 70% and 97% (average about 90%) (Janowitz et al. 1952a). This persisted for from three to six hours and appeared completely reversible. Most striking was the observation that this degree of inhibition of gastric carbonic anhydrase was well tolerated by the dogs. Studies based on the topical application of acetazolamide to the gastric mucosa indicated that the results were due to local action on gastric carbonic anhydrase and not necessarily related to the amount of acetazolamide circulating in the plasma (Janowitz et al. 1952b). This inhibition was also quite independent of alterations in the plasma-electrolyte level.

Studies in Man

With some trepidation the influence of acetazolamide was investigated in man in a similar way (Janowitz et al. 1957). Healthy volunteers and patients with peptic ulcers of the stomach, duodenum, or jejunum were studied during phases of unstimulated interdigestive (basal) secretion and after histamine stimulation. Profound inhibition, up to complete suppression, of the secretion of hydrochloric acid was produced by the intravenous infusion of large doses (73–154 mg. per kg. of body-weight) of acetazolamide given in 1 to 8 hours. Oral acetazolamide was ineffective, probably because such large doses were not given. Although there was tingling of the extremities, anxiety, and breathlessness with doses greater than 114 mg. per kg. of body-weight, acetazolamide was surprisingly well tolerated.

These results in animals and man indicated quite convincingly that carbonic anhydrase is intimately involved in the mechanisms of the secretion of hydrochloric acid by the mammalian stomach, and that a suitable carbonic-anhydrase inhibitor can effectively suppress this secretion in the intact organism without untoward results. The extremely large doses required and, especially, the route of administration are cumbersome and restrict the therapeutic usefulness of acetazolamide. In terms of our goal this method is safe and efficient but unpractical.

Role of Carbonic Anhydrase in Secretion of Acid

The bulk of evidence at present indicates that the inhibition of carbonic anhydrase affects only the secretion of H^+ ions in the stomach, in contrast to its profound effects on the secretion of Na^+ and K^+ ions in the kidney. Experiments, presented in preliminary form by Colcher et al. (1952), lead to the conclusion that acetazolamide does not affect any H^+-K^+ or H^+-Na^+ exchange mechanisms in the stomach. The role of carbonic anhydrase in gastric secretion is therefore believed to be solely concerned with the acid-secreting mechanism.

Evidence based on the "alkaline tide" of the urine and on gastric arteriovenous CO_2 differences, and, especially, the studies of Davies (1951) on the metabolism of the isolated gastric mucosa indicate that, for each mole of HCl secreted into the lumen of the stomach, an equal amount of bicarbonate plus lactate appears in the nutrient (interstitial) fluid. This bicarbonate is derived from plasma CO_2 and from CO_2 arising in the cell as the result of metabolic processes. In both cases the CO_2 is hydrated to form carbonic acid under the catalytic influence of carbonic anhydrase, and this acid ionises to form H^+ and HCO_3^- ions:

$$H_2O + CO_2 \rightleftharpoons H_2CO_3 \rightleftharpoons H^+ + HCO_3^-$$

During the secretion of H^+ ions at the mucosa an equimolar amount of OH^- ions is formed at the inner surface of the canaliculus of the parietal cell. Accumulation of these OH^- ions, with consequent disruption of the milieu intérieur of the cell, is prevented by neutralisation with HCO_3^-. The present experiments indicate that the uncatalysed rate of the reaction written above is not rapid enough in the absence of carbonic anhydrase to meet the full demands of an actively secreting mucosa. Consequently the rate of acid formation falls drastically when inhibitors are administered.

Inhibition of Pancreatic Secretion by Inhibition of Pancreatic Carbonic Anhydrase

Historical

The sequence of events in the analysis of the role of pancreatic carbonic anhydrase has followed rather closely the gastric pattern. The discovery of the enzyme in the pancreas of various animal species by Van Goor (1940) led him to postulate that the large amount of bicarbonate in pancreatic juice was ultimately derived from the hydration of CO_2 under the enzyme's influence. Here again

the failure of inhibitors of carbonic anhydrase of the sulphanilamide group to influence secretion significantly cast considerable doubt on its role (Tucker and Ball 1941). Shortly after our discovery that acetazolamide was effective against gastric secretion of acid Birnbaum and Hollander (1953) reported that a similar effect could be elicited in the dog's pancreas.

Inhibition of Pancreatic Secretion by Acetazolamide in Man (Dreiling et al. 1955)

In these studies duodenal fluid was aspirated, by continuous suction, free from gastric contamination. Pancreatic flow was stimulated by intravenous secretin 1 clinical unit per kg. of body-weight because this hormone causes the pancreas to elaborate an isotonic solution of bicarbonate. Acetazolamide (given as the sodium salt of 'Diamox') was infused intravenously for 1 hour between successive secretin stimulations. Eighteen persons were so studied: four had chronic pancreatitis, and fourteen had no disease of the pancreas. With doses of 80 mg. per kg. of body-weight or more there was a profound inhibition of the flow of pancreatic juice and of the output of bicarbonate from the gland. The effect on the output of enzyme (amylase) was much less.

These results clearly showed that a suitable inhibitor of carbonic anhydrase could significantly suppress pancreatic secretion. The method is safe and efficient but cumbersome. Acetazolamide has been used by several workers in the treatment of external pancreatic fistulæ with apparent success (Watman 1956, Papastrat and Miller 1958).

Role of Carbonic Anhydrase in Pancreatic Secretion

Dreiling and Janowitz (1956) have shown that acetazolamide has no effect on the secretion of Na^+ or of K^+ by the human pancreas but only on the secretion of HCO_3^- ions stimulated by secretin. Secretin has no carbonic-anhydrase activity and does not potentiate the action of carbonic anhydrase in man.

In our present formulation the HCO_3^- ions of pancreatic fluid are derived from the hydration of CO_2 (of cellular metabolic origin in part and from plasma CO_2 in lesser part) under the influence of the enzyme. Inhibition of the enzyme limits the amount of HCO_3^- ions available for secretion.

In addition recent analysis indicates another function for the carbonic anhydrase (Janowitz and Dreiling 1957). It is well known that the HCO_3^- concentration of pancreatic juice is a function of the rate of secretion, varying directly, whereas the concentration of Cl^- ions varies inversely; the sum of $Cl^- + HCO_3^-$ is remarkably close to 160 mEq. per litre and isotonic. Under the influence of acetazolamide, although the flow and output of HCO_3^- decrease, the level of HCO_3^- tends to remain raised. This has suggested a second function for the enzyme: participation in a Cl^--HCO_3^- exchange in the ducts of the pancreas, which exchange may be interfered with by the carbonic-anhydrase inhibitors.

Future Lines of Approach to Intracellular Inhibition

Much energy has been expended in the effort to find an "ideal antisecretory drug" with cholinergic-blocking action. Experimental and clinical studies have defined the limitations of the available compounds which suppress secretion by interfering with the neural pathways for stimulation. It seems clear to me that future refinements along this line are not likely to bring the "ideal" any closer in view of the widespread distribution of cholinergic-mediated neural pathways throughout the body; the quest for drugs without significant side-effects seems particularly likely to be fruitless.

The present studies indicate that intracellular inhibition of secretion by digestive glands is feasible in the intact human without limiting untoward effects. The carbonic-anhydrase inhibitors at present available, however, require large intravenous doses. It is not unreasonable to believe that other compounds may be synthesised which are effective in smaller doses. Some unpublished evidence suggests that acetazolamide and several of its derivatives may be concentrated within the parietal cells. However, the distribution of carbonic anhydrase in several key organs in the body may be the limiting factor to the present experimental approach. What is needed is more knowledge of the more specific intracellular enzyme-catalysed processes involved in exocrine secretion. Though a considerable amount of information about overall metabolic processes within the gastric mucosa has accumulated, large gaps in our knowledge still exist. The recent demonstration by Douthwaite and Booth (1956) of the inhibition of gastric secretion in man by topical application of organic mercury to the mucosa represents a relatively non-specific approach towards the same end.

Summary and Conclusion

Administration to man of large doses of intravenous acetazolamide has shown two facts:

(1) Carbonic anhydrase plays a vital role in man in the gastric secretion of hydrochloric acid and in the pancreatic secretion of bicarbonate.

(2) Inhibition of this enzyme suppresses gastric and pancreatic secretion without untoward disturbing effects.

The route of administration and dosage required for currently available carbonic-anhydrase inhibitors makes this approach unpractical at present.

Inhibition of the intracellular processes of digestive secretion offers a new and feasible approach to future therapeutic research.

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"Authors have deceived, by not telling how oft such a Medicine hath failed, as well as how oft it hath cured: for there is no Medicine in use, but hath cured some, and there is none so excellent as to cure all; nor are all Diseases, though never so slight, curable; nor are all diseases, though never so dangerous and grievous, always and in all incurable."—WILLIAM DRAGE, *A Physical Nosonomy*; pp. 4-5. London, 1665.

BILIARY VESICULAR STASIS

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THE commonest disorder of the biliary tract is a disorder of its motility—biliary dyskinesia. Of a recent series of 200 consecutive cases investigated and treated for biliary-tract disorder, a dyskinesia was found, either alone or in association with some morphological change, in 126. The simplest and commonest form of dyskinesia is a vesicular stasis, a condition in which the gallbladder empties insufficiently. This condition was present in 34 of the 126 cases of dyskinesia in this series.

Biliary vesicular stasis may be divided into two main groups, hypotonic and hypertonic.

Classification of Vesicular Stasis

I. *Hypotonic vesicular stasis*
  1. Primary hypotonia.
    (*a*) Purely functional.
    (*b*) Organo-functional (i.e., associated with some morphological abnormality).
  2. Secondary hypotonia.

II. *Hypertonic vesicular stasis*
  1. Functional or spasmodic.
  2. Organic.
    (*a*) Stone.
    (*b*) Cystic dyskinesia
      (i) Cystic valve.
      (ii) Infundibulo-colo-cysticitis.
      (iii) Fibrosis of sphincter of Oddi.

In the present series there were 20 cases of hypotonic vesicular stasis. Chiray et al. (1925) in Paris described an atonic distension of the gallbladder which was completely independent of any mechanical obstruction and constituted a definite clinical, radiological, and therapeutic entity.

Hypotonic Vesicular Stasis

Hypotonic vesicular stasis is a slowly progressive disease, occasionally with exacerbations. It is commoner in women and usually begins early in life. The patient complains of dyspepsia, described as a heavy dull feeling in the epigastrium and below the right costal margin which comes on a quarter to half an hour after meals and remains for two to three hours. These attacks last three or four days or more and appear to be initiated by the ingestion of fats, eggs, and sometimes fruit and green vegetables. Discomfort and pain are felt in the epigastrium and below the right costal margin, and radiate to the dorsolumbar region and to the right scapula and interscapular regions. These symptoms have usually persisted for many years before the patient comes to consultation, by which time the attacks have become more frequent and the pain more severe. Appetite and weight are lost. The attacks of pain, lasting half an hour or so, gradually increase in severity until the crises of pain resemble true colic. Uncommonly these severe attacks may be associated with jaundice (in my series of 20 cases of hypotonic stasis, 4 had a history of jaundice; and in only 1 of these was any possible morphological cause found—a stone) and there may be a raised temperature and copious bilious vomiting. Associated with these attacks of pain there is often severe headache of a migrainous type.

On examination there may be tenderness on palpation below the right costal margin. There will be changes in the character, amount, and flow of the gallbladder bile (which is more concentrated and flows for a longer period) obtained either by the Meltzer-Lyon test or by the chronovolumetric estimation of bile (Varela-Lopez 1950).

On cholecystography, the gallbladder is often long and flask-shaped and lies parallel to the spinal column. In the erect position the density of the shadow is greatest in the fundus. The form of the shadow may be distorted by the surrounding viscera. It is, however, impossible to make an accurate diagnosis by means of the "classical" cholecystogram. An accurate diagnosis can be made by serial cholecystography (Rose 1958), in which a series of cholecystograms (anteroposterior and lateral) are taken before and at ten-minute intervals after a fatty meal. From these the volume of the gallbladder is computed and an evacuation curve is drawn. The angle which the long axis of the gallbladder makes with the spine in the lateral view (angle of erection) is measured; the size of this angle is an indication of the tone and the degree of contraction of the gallbladder. On serial cholecystography the cystic duct is often visible before the fatty meal is given, the gallbladder evacuates insufficiently at all stages, and there is little or no evidence of active contraction or tone of the gallbladder.

It may be impossible to distinguish between a primary and a secondary stasis before operation and manometric investigation (apart from trans-parieto-hepatic vesicular puncture). The peroperative investigations are (1) measurement of the pressure within the biliary tract on a recording manometer, and (2) radiography of the biliary tract after the injection of diodone. At operation the gallbladder is in many cases found to be flaccid and slightly larger than normal. When pressure recordings are made, the residual pressure in the gallbladder is less than the normal 18 cm. of water. Peroperative radiography shows that the gallbladder is distended, elongated, and flask-shaped. It evacuates easily into the common duct, which is itself hypotonic, and the opaque material flows without resistance into the duodenum and also up into the hepatic ducts. The sphincter of Oddi is widely open. The common duct is usually widely dilated and evacuates rapidly; the hepatic duct may also be dilated. The hepatic and common ducts often form part of a large curve, or they may be sinuous.

The treatment of hypotonic vesicular stasis is in the first instance medical, but eventually in most cases there must be recourse to surgery. In considering the surgical treatment of hypotonic vesicular stasis it is important to emphasise that an exact diagnosis is a prerequisite and this can be obtained only by manometry and radiography at operation (Mallet-Guy and Rose 1956). It is only by these means that a primary hypotonia may be differentiated from a secondary atony of the gallbladder. The surgical treatment of primary vesicular hypotonia is based on the fact that the right greater splanchnic nerve is the inhibitor nerve of the biliary tract (Mallet-Guy and Maillet 1941, Mallet-Guy and Guillet 1942). In my series of 20 cases of hypotonic vesicular stasis I performed a right splanchnicectomy in each case. Each patient has been followed up by interview at intervals of one, two, three, six, and twelve months after operation and then annually. In classification of the results from operative interference in my series of disorders of the biliary tract and pancreas, the following groups have been used throughout:

Group Ia: No symptoms and no dietary restrictions.
Group Ib: No symptoms but some dietary restrictions.
Group II: Persistence of some minor symptoms—i.e., symptoms less severe than before operation (the presence of even one symptom puts the patient into this group).
Group III: Persistence of some major symptoms—i.e., symptoms as severe or even more severe than before operation (the presence of even one severe symptom puts the patient into this group).

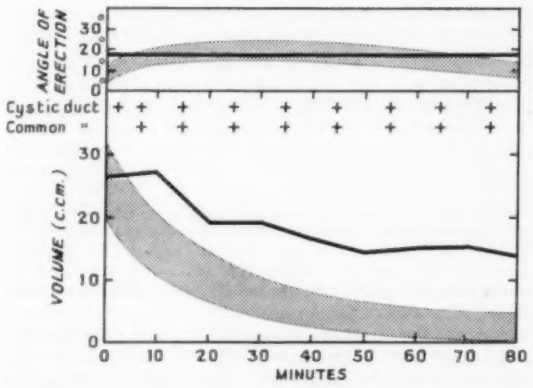

Fig. 1—Serial cholecystogram, of case 1, showing a vesicular hypokinesia and a hypotonia. The gallbladder is of normal size but evacuates insufficiently. The angle of erection does not change throughout the examination. The plus signs indicate visibility of a duct.

Group IV: Recurrence after a period of relief.

Groups I and II are regarded as good results and III and IV as bad results.

The following is a brief résumé of a typical case of hypotonic vesicular stasis:

Case 1.—A woman, aged 32, weight 9³/₄ st. *Dec. 31, 1947*: onset of fever (which lasted only two days), anorexia, nausea and vomiting, upper abdominal pain. The liver was enlarged and tender. A diagnosis of infective hepatitis was made.

Jan. 30, 1948: the symptoms persisted and she was readmitted; a diagnosis of duodenal ulcer was made, but the symptoms did not respond to the appropriate therapy.

April 9, 1948: admitted to the teaching hospital when two other physicians and a surgeon were consulted and a diagnosis of subacute pancreatitis was made. The symptoms continued, with progressive loss of weight.

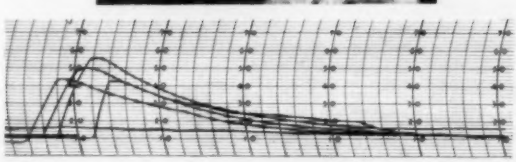

Fig. 2—The operative cholecystocholangiogram of case 1, showing an atonic gallbladder with a sinuous common duct. The manometric reading shows that the intravesicular pressure stabilised at 12 cm. of water.

July, 1948: there was a further acute attack, and readmission to hospital. There was continuing loss of weight. This time a pyloric ulcer was diagnosed, but this was not in accord with her symptoms. Appendicectomy performed.

Jan. 9, 1949: referred to another teaching hospital with another acute attack of pain and dyspepsia; this time there was tenderness in the upper right abdomen and a marked intolerance of fats. Weight was 7 st. 6 lb. After another negative cholecystogram, a second laparotomy was performed, when no abnormality other than adhesions was discovered. The adhesions were divided. The symptoms persisted but her weight remained at 7¹/₂ st. There were frequent migrainous bilious attacks.

The patient left the district and was not seen again until *July 19, 1955*, when she returned with an acute attack of pain, one of many frequent recurring attacks. There was obvious bilious pallor, tenderness below the right costal margin, and headaches. At this stage the patient came under my care; a serial cholecystogram (fig. 1) demonstrated vesicular stasis, probably of the primary hypotonic variety. In *October, 1955*, the diagnosis was confirmed at operation (fig. 2) and a right splanchnicectomy was performed.

Now (two years after the operation) the patient has regained her lost weight and, apart from taking a little care with her diet, is perfectly restored to health and has taken up her full duties as a teacher. She still has a few minor symptoms which in no way trouble her. A further serial cholecystogram showed an improvement, but not a complete return to normal, in the motor function of the biliary tract.

TABLE I—RESULTS FROM THE SURGICAL TREATMENT OF HYPOTONIC VESICULAR STASIS

Duration of follow-up (months)	Classification of results				
	Ia	Ib	II	III	IV
3	..	..	..	..	..
3–6	..	..	..	..	..
6–12	2	..	2	..	..
12–24	9*	2	2	1	1
24–36	..	..	..	..	1†

* One of these patients had a cholecystitis only and a cholecystectomy only was performed.
† This case is now recognised as one of a kink associated with a hypotonia, and has subsequently had a cholecystectomy with a good result.

The condition was considerably improved by a right splanchnicectomy—so much so that the patient and her relations regard her as being cured; but as she still must take some care with her diet and must not overindulge in fats, and still has some minor symptoms, the result must be placed in group II.

Table I shows the analysis of the results obtained from the surgical treatment of hypotonic vesicular stasis. In the 20 cases operated on, 17 results can be regarded as good and 3 as bad. There is not only symptomatic relief but also improvement in the motor function of the biliary tract: in 5 cases repeat control cholecystograms were carried out several months after the operation, and in each there was an improvement in the evacuation curve, which, however, in no case returned to absolutely normal. It seems reasonable, therefore, to attribute the symptomatic relief to an improvement in the function, and not, as critics have suggested, to the psychological effect of the treatment or to the enthusiasm of the doctors treating the patient!

In 13 of these cases of hypotonic vesicular stasis, there was no morphological abnormality; in 4 there were gallstones, in 2 a low-grade chronic cholecystitis, and in 1 cholesterosis. 6 of these latter 7 cases had a cholecystectomy, and 1 had a cholecystlithotomy as well as the splanchnicectomy.

Hypertonic Vesicular Stasis

Hypertonic vesicular stasis is a condition in which the gallbladder empties insufficiently on account of some obstruction to its evacuation, either functional or mechanical, and in which the intravesicular pressure is raised when it is measured by manometry at operation. Of the 34 cases of vesicular stasis which form the basis of this paper 14 were of the hypertonic variety.

The purely functional type is quite rare, and there were only 5 examples in this series. In addition, in 2 cases there were duodenal ulcers. This condition is caused by a

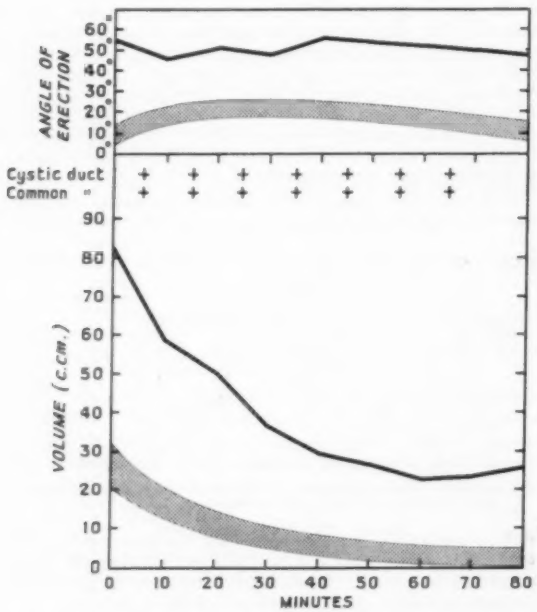

Fig. 3—The serial cholecystogram of case 2, showing an abnormally large gallbladder which does not empty completely, with a high angle of erection. The presumptive diagnosis is one of generalised biliary hypertonia.

spasm of the sphincter of Lütkens (1926) and also may be associated with a spasm of the sphincter of Oddi. These spasms may be either primary (i.e., no organic lesion can be demonstrated), or secondary to some organic lesion, such as a duodenal ulcer.

Clinically there is no clear-cut syndrome, and it is impossible to make an accurate diagnosis from the clinical history and physical examination alone. There may be episodes of severe pain in the right hypochondrium, similar to attacks of gallstone colic, unaccompanied by an elevation of temperature. Sometimes the pain is less precise and may even resemble that of a peptic ulcer. Other patients complain of a typical biliary dyspepsia associated with headache and aggravated by fats. Serial cholecystography shows a vesicular stasis with increased vesicular tone. On the other hand, in longstanding cases a hyposystole may be present—i.e., there is a slight initial contraction of the gallbladder which soon passes off. Manometry at operation shows an intravesicular pressure which is above the normal of 18 cm. and falls after the vagus is blocked with a local anæsthetic. Radiography at operation shows a somewhat dilated gallbladder, a narrow cystic duct, and sometimes a common duct which ends

TABLE II—THE RESULTS OBTAINED FROM THE SURGICAL TREATMENT OF HYPERTONIC VESICULAR STASIS DUE TO SPASM OF THE SPHINCTER OF LÜTKENS

Duration of follow-up (months)	Classification of results				
	Ia	Ib	II	III	IV
3	..	..	..	..	..
3–6	..	1	1	..	..
6–12	2	..	1	..	..
12–24	1	..	1	..	..

1 case of recurrent pancreatitis with obstruction of the sphincter of Oddi, due to a combination of spasm and fibrosis, was classified as a group Ia after 12 months.

like a well-sharpened pencil, indicating a coexisting spasm of the sphincter of Oddi.

Medical treatment of this condition usually fails, though some temporary improvement can be obtained by the administration of spasmolytics. The surgical treatment of the purely functional type of hypertonic vesicular stasis is

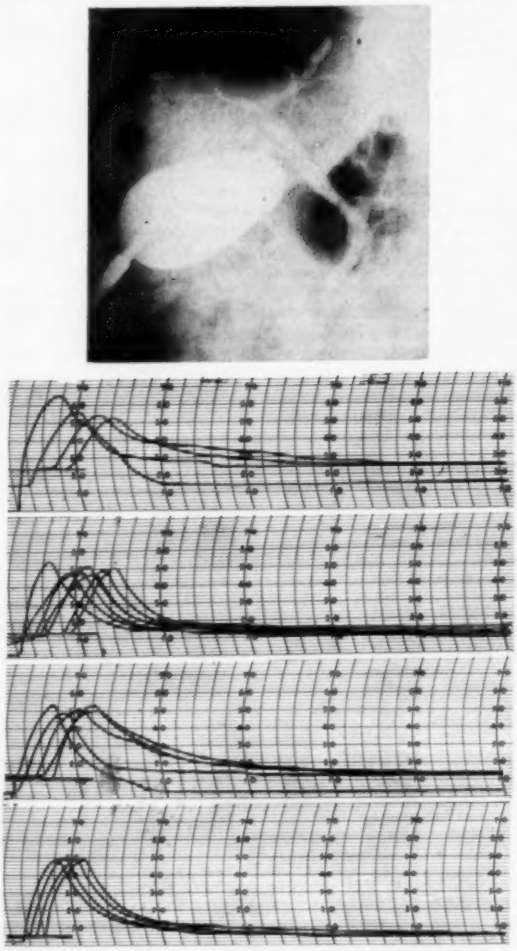

Fig. 4—The operative cholecysto-cholangiogram of case 2, showing a pear-shaped gallbladder, a slightly narrowed common duct which is angulated, and a long reflux along the pancreatic duct. The manometric readings show in the top graph a high intravesicular pressure, which stabilised at 24 cm. of water; the second graph shows the pressure in the common duct, which stabilised at 14 cm. of water. The third and fourth graphs show that after blocking of the vagus the pressures stabilised at 12 cm. and 6 cm. respectively, indicating a spasmodic hypertonia.

to eliminate the spasm by vagal section or, as Mallet-Guy et al. (1947) advise, by cholecystectomy.

Case 2.—A man, aged 43, had an eight-year history of dyspepsia, with pain across the upper abdomen radiating to both shoulders, to the left side of his chest, and into his back. He had flatulence, nausea, and vomiting, which was aggravated by fatty foods. Serial cholecystography (fig. 3) showed a very large gallbladder which evacuated imperfectly with a high angle of erection. The presumptive diagnosis was a generalised biliary hypertonia.

At operation, the gallbladder was large but otherwise appeared normal. The intravesicular pressure stabilised at 24 cm. of water. The cholecysto-cholangiogram showed a narrow common duct and a long reflux along the pancreatic duct. The pressure within the common duct stabilised at 14 cm. of water. After the vagus had been blocked with local anæsthetic, the pressures stabilised at 12 cm. and 6 cm. respectively. A diagnosis was made of spasm of both the sphincters of Lütkens and Oddi (fig. 4).

A low vagotomy was performed. More than a year after his operation, the patient remains completely cured.

The results of the surgical treatment of these cases are shown in detail in table II. To sum up, in the 5 cases of pure spasm of the sphincter of Lütkens, good results were obtained, and both the patients with an associated duodenal ulcer were completely cured, by a vagotomy and posterior gastroenterostomy. There was in addition 1 case of vesicular stasis associated with a recurring pancreatitis and an obstruction to the sphincter of Oddi by a combination of spasm and fibrosis; cholecystectomy, vagotomy, and sphincterotomy were performed, with a complete cure.

A hypertonic vesicular stasis may be caused by a valve-like anatomical abnormality in the region of the junction between the cystic duct and the gallbladder. This condition was first described by Schmeiden in 1920. These valve-like peculiarities and certain dysplasias of the neck of the gallbladder and the infundibulum give rise to intermittent obstruction to the evacuation of the gallbladder, which is followed by dilatation, angulation, and further obstruction. The gallbladder may be divided anatomically into the fundus, the body, the neck, and the infundibulum, which leads into the cystic duct (fig. 5)

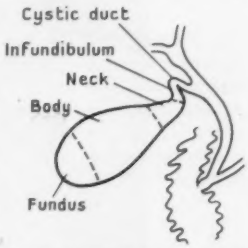

Fig. 5—Anatomical regions of the gallbladder.

It is very difficult to differentiate a valve-like deformity from a pronounced kink in the infundibulocolic region of the gallbladder, and it may be impossible to say whether a particular specimen should be classified as a valve or as a kink. Such a deformity can be associated with a generalised biliary hypotonia. It was thought, however, that these abnormalities should be discussed with the other causes of hypertonic vesicular stasis. There is another somewhat ill-defined group of conditions which Guy Albot (1953) and his associates call infundibulo-colo-cysticitis, in which they include the various dysplasias other than kinks, valves, and acute inflammations. This is a form of the so-called chronic cholecystitis which is localised to the infundibulum and neck of the gallbladder and a fibrotic condition of the cystic duct.

The clinical signs and symptoms and the cholecystographic findings are variable and depend on whether the gallbladder is able to contract forcibly against the obstruction or whether the contractile power of the gallbladder has failed and a state of atony exists. The most commonly found (and relatively early) condition is one in which the gallbladder still retains its power to contract. The patient complains of severe attacks of pain of short duration brought on by fatty foods. Between attacks there is usually comparative freedom from pain. In the early stages of this condition the serial cholecystogram shows a gallbladder which evacuates, insufficiently, with an increase in tone and contraction. In most cases there is an obvious kink in the infundibulo-colic region, usually best seen on the lateral views (fig. 6), but sometimes more distinctly seen on the anteroposterior view (fig. 7).

Eventually the gallbladder loses its power to contract effectively against the obstruction. In this late stage the

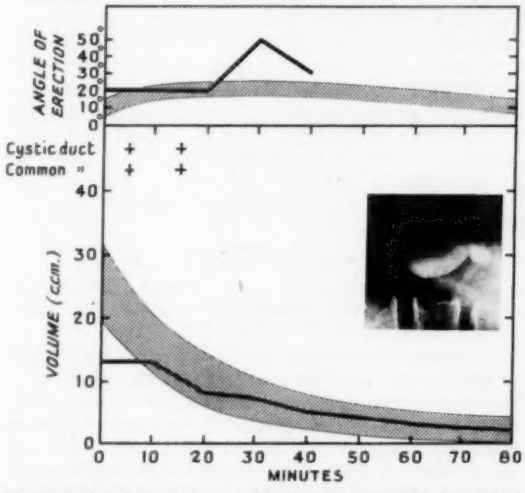

Fig. 6—Serial cholecystogram, showing a small gallbladder which evacuates insufficiently, with an angle of erection which rises sharply late in the examination. The inset, a lateral view of the gallbladder, shows a marked kink in the infundibulo-colic region of the gallbladder. A presumptive diagnosis was made of vesicular hypokinesia associated with a kink.

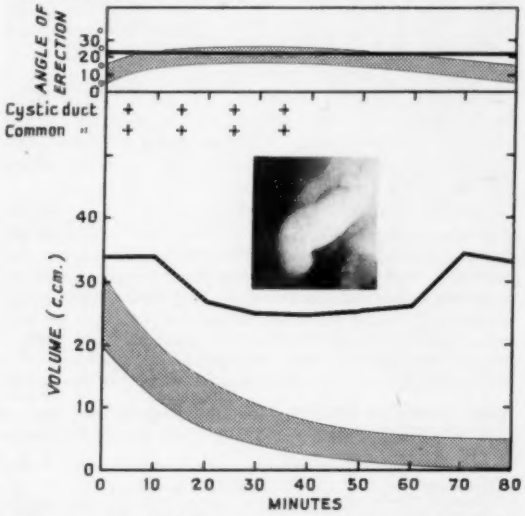

Fig. 7—The serial cholecystogram of case 3, showing a vesicular hypokinesia and hypotonia associated with a kink in the infundibulo-colic region (demonstrated on the anteroposterior view). A presumptive diagnosis was made of vesicular hypotonia and hypokinesia associated with a kink.

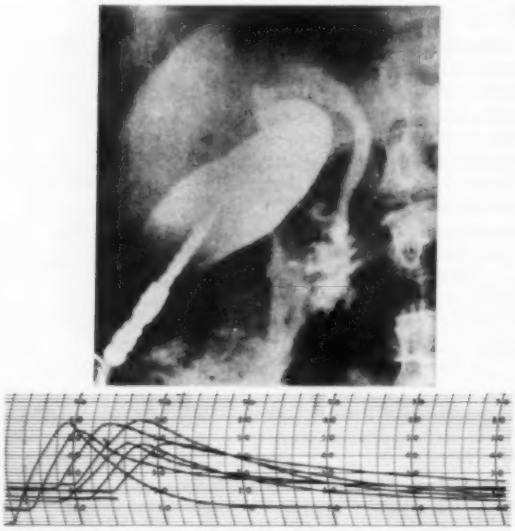

Fig. 8—Operative cholecysto-cholangiogram of case 3, which shows a gallbladder slightly larger than normal, a marked infundibulo-colic kink, a long spiral valve, and a widely patent sphincter of Oddi. Manometric readings show an intravesicular pressure which rose to 24 cm. of water and fell to stabilise at 15 cm. of water, indicating a biliary hypotonia associated with an infundibulo-colic kink.

attacks of pain are replaced by a dull ache, more constant in character, in the epigastrium and radiating to the back. Cholecystographically the gallbladder is atonic. It is impossible as a rule at this stage to differentiate this condition from a primary hypotonic stasis. This differentiation can be made only by manometry at operation (or transparieto-hepatic puncture of the gallbladder). In this series there were 6 patients with a valve or kink, one of which was associated with a gallstone.

In the cases of a cystic valve and of infundibulo-colocysticitis, the pressure within the gallbladder is typically higher than normal and is not reduced by blocking the vagus. The pressure curve of the infundibulo-colic kink is also quite characteristic in this condition: the pressure curve rises to a certain level and then suddenly drops to a lower level, where it stabilises. The peroperative radiographs often show a well-defined kink or tortuosity in the infundibulo-colic region. The treatment of these cases is cholecystectomy, supplemented by the correction of any dystonia of the common duct which may be present.

Case 3.—A woman, aged 45, had a fifteen months' history of painful dyspepsia with nausea and vomiting. The pain was in the epigastrium and below the right costal margin, and radiated to both shoulders. She had severe headaches with the dyspepsia, which was aggravated by fatty foods. Serial cholecystography (fig. 6) showed a gallbladder slightly larger than normal with gross insufficiency of evacuation. The angle of erection was slightly higher than normal but did not increase during the test. An obvious infundibulo-colic kink was demonstrated. A presumptive diagnosis was made of a hypertonic vesicular stasis.

At operation, there were many adhesions between the under surface of the gallbladder and the surrounding viscera; these were especially dense in the region of the neck. The intravesicular pressure rose to 23 cm. of water and then stabilised at 15 cm. of water.

The cholecysto-cholangiogram showed an infundibulo-colic kink (fig. 8). The pressure within the common duct stabilised at 10 cm. of water.

A cholecystectomy was performed. After 21 months the patient is completely cured and no longer has severe headaches.

TABLE III—RESULTS OBTAINED FROM THE SURGICAL TREATMENT OF HYPERTONIC VESICULAR STASIS DUE TO A VALVE OR AN INFUNDIBULO-COLIC KINK

Duration of follow-up (months)	Classification of results				
	Ia	Ib	II	III	IV
3	..	..	1	..	..
3–6	..	..	..	..	..
6–12	1	1	..	..	..
12–24	3	1	..	..	..

Table III gives a detailed analysis of the results; in brief all 7 patients obtained good results. In 1 case there was a generalised biliary hypotonia, and a right splanchnicectomy was performed in addition to a cholecystectomy.

On rare occasions a very small stone may be found in the cystic duct, causing an incomplete obstruction of the duct and thus leading to a hypertonic vesicular stasis. If the obstruction is complete there will be an exclusion of the gallbladder and no gallbladder shadow on cholecystography.

Summary and Conclusions

Vesicular stasis is a common disorder of the biliary tract; it was found in nearly a fifth of 200 consecutive patients who were investigated and treated. There are two main types, the hypotonic and the hypertonic.

The " classical " cholecystogram in this condition shows no abnormality, and an accurate diagnosis can only be made by means of serial cholecystography or transparieto-hepatic puncture of the gallbladder before operation, and by manometry and radiology at operation. Of 34 cases of vesicular stasis treated surgically, the results were good in 31, only 3 remaining unimproved.

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ACROPARÆSTHESIA IN MYXŒDEMA
A CLINICAL AND ELECTROMYOGRAPHIC STUDY

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LETHARGY and slowness of movement are well known in myxœdema and widely accepted as manifestations of the effect of the hypothyroid state on the nervous system. Paræsthesia, though less familiar, is mentioned by several authors (Williams 1950, Werner 1955, Soffer 1956) and nerve deafness has been described. Nevertheless, no systematic clinical study of the neurological manifestations of myxœdema has been made, and the nature of many of these symptoms is assumed, without adequate evidence, to be the result of hypometabolism of the nervous system. We report here clinical and experimental observa-

tions designed to test this hypothesis. Preliminary results have been recorded (Murray and Simpson 1957).

Material and Methods

The present series comprises the first 35 patients observed in a general study of myxœdema.

The diagnosis was made on the basis of the clinical findings, laboratory investigations, and results of therapy. The tests used were estimations of the basal metabolic rate (B.M.R.), the serum-cholesterol levels, and radio-iodine studies consisting of the measurement of the urinary excretion of radio-iodine over the first forty-eight hours and the uptake of radio-iodine by the thyroid gland over the first forty-eight hours after the dose had been given. A final diagnosis was made only after the responses of the clinical state, the B.M.R., and the serum-cholesterol level to l-thyroxine sodium were known. All the patients were observed for at least three months. The cases were classified as minimal, mild, moderate, or severe on the basis of the general clinical picture and the B.M.R.

11 patients were examined by an electromyographic method previously described (Simpson 1956).

The conduction velocity of the median and ulnar nerves was measured by recording the time delay of the muscle-action potential (of the abductor pollicis brevis and of the abductor digiti minimi muscles respectively) after supramaximal electrical stimulation of the nerve at elbow and wrist. Coaxial needle-electrodes or silver-disc surface electrodes were used with conventional amplification and cathode-ray oscilloscope recording techniques. The method and the type of record obtained are illustrated in the accompanying figure.

Results

Paræsthesia

Of the 35 consecutive patients 26 complained of paræsthesia of the fingers. This was usually described as numbness or pins-and-needles and tended to occur either during certain activities—e.g., sewing, knitting, or washing clothes—or during the night, when the tingling was often sufficient to prevent sleep or to rouse the patient from sleep. It was usually present on waking in the morning and passed off soon after rising. Sometimes an "electric shock" sensation was noticed if an affected finger suddenly touched a hard object. Both hands were involved in 20 patients. 17 patients stated that the little finger and sometimes also the ring finger were not affected by paræsthesia. 7 described involvement of all their fingers, and 2 patients described numbness restricted to the ulnar side of the hand. Motor symptoms were more difficult to assess. Most of the patients described the clumsiness of manipulation which is well recognised in myxœdema, but 8 patients described marked loss of power of finger-thumb grip and wasting of the hand suggestive of genuine paresis. Only 2 patients mentioned occasional tingling of the toes.

Sensory Impairment

Evidence of sensory impairment was present in 8 cases. 6 of these and 2 further cases without sensory loss showed muscle atrophy. The sensory impairment was invariably on the radial side of the hand. Appreciation of pinprick was reduced on the pads of the thumb, index, and middle fingers, and there was hypoæsthesia for cotton-wool on the same fingers and the radial half of the ring finger, sometimes extending proximally to the palm of the hand. In 1 case the dorsum of the radial part of the hand was similarly affected, but in all the others the changes were confined to the palmar surfaces. No demonstrable sensory changes were noted in the distribution area of the ulnar nerve.

Motor Changes

The motor changes usually consisted in weakness and atrophy of the abductor pollicis brevis and the opponens pollicis muscles. One patient had wasting of the first dorsal interosseous muscle of the right hand, and another had fasciculation of the flexor pollicis brevis. All these muscles are wholly or in part supplied by the median nerve. Thus all the objective sensory and motor findings pointed to a lesion of the median nerve.

Electromyography

On electromyography with coaxial needle-electrodes the classical signs of partial denervation (spontaneous fibrillation and reduced motor-unit activity) were noted in 5 cases with objective weakness. These manifestations were confined to the radial border of the thenar eminence, except in 1 case with fibrillation of the first dorsal interosseous muscle, which sometimes receives fibres from the median nerve (Rowntree 1949).

Conduction Velocity

Conduction velocity determined by the method described was examined in 11 cases (table I). One of these, case 1, is also case 15 of the original report on this method (Simpson 1956). Table I shows that the conduction-time of the median nerve was much increased in 3 cases, and that this increase was always due to a delay peripheral to the wrist-stimulating cathode. (The conduction-time between the two points on the nerve, obtained by subtraction, was normal in every case.) In 4 other cases the conduction-time in the distal part of the median nerve was a little longer than is found in normal subjects, but the equipment used in the present work did not allow for measurement to an accuracy greater than 1 msec. However, it is important to state that no unusual retardation was ever detected in the ulnar nerve, even in the first 3 cases mentioned.

Carpal-tunnel Syndrome

The clinical and electromyographic findings indicate that the neuropathy is restricted to that part of the median nerve distal to the wrist, comparable in every way to the common carpal-tunnel syndrome. In 1 patient acro-paræsthesia of the right hand was promptly relieved by division of the flexor retinaculum six months before myxœdema was recognised. When we examined her, she had moderate myxœdema. Weakness of her right abductor pollicis brevis was still present. She had recently begun to complain of tingling of the finger-tips of her left hand at night. No objective clinical or electromyographic changes were found. The symptoms disappeared when her myxœdema responded to treatment.

TABLE I—CONDUCTION VELOCITY

Case no.	Length* (cm.)		Delay † (msec.)		Difference (elbow to wrist) (msec.)	Electromyography	Paræsthesia
	Elbow	Wrist	Elbow to muscle	Wrist to muscle			
1	30	6	20	14	6	Denervation	+
2	26·5	4·5	21	16	5	,,	+
3	33	6	18	12	6	,,	+
4	28	5	12	6	6	,,	+
5	22	4	12	6	6	,,	+
6	27	5	11	6	5	Normal	−
7	22	5	11	6	5	,,	+
8	23	5	9	5	4	,,	+
9	22	4	8	4	4	,,	+
10	24	5	8	4	4	,,(?)	+
11	27	6	9	4	5	,,	−

* Length measured from centre of stimulating cathode on median nerve to proximal recording electrode on abductor pollicis brevis muscle.
† Time interval from stimulus to nerve to onset of action potential in muscle. Normal range: elbow 8–12 msec., wrist 3–5 msec.

Relation of Neuropathy to Severity of Myxœdema

No correlation was noticed between the presence of neuropathy and the severity of the myxœdema. Indeed many patients with neuropathy were only considered to have mild myxœdema, whereas the most severely myxœdematous patient in the whole series had no neuropathy. On the other hand, a clear relationship was established between the clinical response to treatment of the myxœdema and the disappearance of the acroparæsthesia.

Follow-up

At the most recent survey 30 of the 35 patients had become euthyroid. Only 3 of these 30 still noticed occasional nocturnal paræsthesia. 1 had atrophy of the thenar muscles, and this was unchanged. The 27 others were normal. 4 patients were still graded as " mild myxœdema ". 1 of these had no change in the acroparæsthesia; the 3 others still had it occasionally. 1 case was still considered to be " moderately severe ", with acroparæsthesia unchanged.

TABLE II—RELATION OF BODY-WEIGHT TO ACROPARÆSTHESIA

Case no.	Weight (kg.)	Change in weight	B.M.R. (%)	Acro-par-æsthesia	Comment
12	77·8 70·5 75·0 67·0	−7·3 +4·5 −8·0	−31 +12 − 9 +21	++ − + −	Myxœdema relapsed when treatment was changed, with transient return of acroparæsthesia
2	77·3 68·7	−8·6	−36 − 2	++ −	Complete remission and restoration of conduction velocity (table III)
13	81·4 75·0	−6·4	−26 + 1	++ −	Rapid response to triiodothyronine (3 weeks), no relapse
6	63·6 61·8	−1·8	−28 − 3	− −	Severe myxœdema, but patient not overweight
4	85·0 82·7	−2·3	− 5 +21	++ +	Good metabolic response but remains overweight
8	68·2 67·2	−1·0	−30 − 8	+ +	Ditto
14	78·6 72·7	−5·9	−17 + 3	++ +	Ditto
15	64·0 66·3	+2·3	− −	+ +	Myxœdema improved, but patient gained weight

One of the histories is particularly interesting (table II, case 12):

Bilateral median paræsthesia had been very persistent in a woman with moderate myxœdema. When this was treated with triiodothyronine, the neuropathy disappeared. When treatment was changed to thyroxine, she had a temporary relapse, during which paræsthesia returned; but it finally disappeared when control of myxœdema was regained.

Body-weight

The patient's weight appears to us to be of greater significance than the degree of hypothyroidism. Selected cases illustrating this trend are shown in table II, which shows that severe myxœdema without excessive body-weight is not accompanied by acroparæsthesia (case 6), whereas very slightly myxœdematous patients have this symptom if they are overweight (case 4), and good metabolic response to treatment is not associated with recovery from acroparæsthesia if there is not significant loss of weight (cases 4, 8, and 14). One man (case 13) with severe myxœdema and bilateral median paræsthesia, with clumsiness of the hands, lost 6·4 kg. weight in three weeks when treated intensively with triiodothyronine. Within that period his paræsthesiæ disappeared and have not returned.

TABLE III—RESTORATION OF NERVE-CONDUCTION VELOCITY

Date	Weight (kg.)	Length (cm.)		Delay (msec.)		Difference (elbow to wrist) (msec.)
		Elbow	Wrist	Elbow to muscle	Wrist to muscle	
Aug. 21, 1956	77·2	26·5	4·5	21	16	5
Jan. 23, 1957	68·6	25·5	5	12	7·5	4·5

Case 2 before and after treatment. Recovery of conduction velocity is not yet complete.

Restoration of Nerve-conduction Velocity

This was seen in one of the most severely affected patients (case 2).

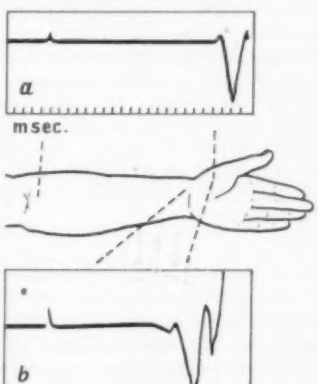
The patient, a woman with " moderately severe " myxœdema, had bilateral paræsthesia and sensory loss of median distribution in her right hand. Movements of her thumbs were clumsy but quite powerful. No obvious wasting was present, but electromyography disclosed partial denervation of the right abductor pollicis brevis muscle. Conduction velocity of the right median nerve distal to the proximal palmar crease was greatly diminished, though the velocity above this point was normal (table I). Treatment with thyroxine achieved clinical cure of myxœdema, the patient lost 8·6 kg., the median-nerve symptoms disappeared, and the conduction velocity returned to normal (table III).

Discussion

Peripheral-nerve disorders in myxœdema are not widely recognised. The standard textbooks on neurology (Wilson 1955, Brain 1955) list myxœdema among the causes of peripheral neuritis, but no references to original papers are given, and it is not clear whether the tabulation represents the personal experience of the writers. From the context it appears that generalised peripheral neurítis is intended rather than the more restricted syndrome termed " acroparæsthesia ", which is, by usage, confined to paræsthesiæ of the hands (Kremer et al. 1953). Paræsthesiæ of the hands in myxœdematous patients have been mentioned by some workers (Williams 1950, Werner 1955, Soffer 1956) but have not been studied in detail.

The diagnosis is doubtful in the 2 cases reported by Currier and Brink (1948) to show correlation between multiple neuritis and hypothyroidism.

Their first case developed a neuropathy ten years after thyroidectomy. The B.M.R. was −27%, but the blood-cholesterol was 80 mg. per 100 ml.; there was also a history of macrocytic anæmia. Free HCl was present in the gastric juice, but steatorrhœa was not excluded. Treatment with thyroid extract caused " little change ", but there was delayed improvement. In their second case myxœdema was diagnosed despite a B.M.R. of −8%, because the yellow colour of the patient's hands was considered characteristic of carotenæmia, which earlier workers (cited by Currier and Brink) believed to indicate hypothyroidism. This patient had an acute paresis of all limbs,



Case 3—Shock artefact shows time of stimulus at cathode on median nerve at *a*, elbow, *b*, wrist. After delay due to conduction along nerve this is followed by muscle-action potential recorded by coaxial needle-electrode in abductor pollicis brevis muscle.

with retention of tendon-reflexes and a zone of sensory deficit along the dorsal spine. This unusual syndrome was regarded by Currier and Brink as a manifestation of polyneuritis, but they admit that neither of their cases conforms to accepted criteria.

We have therefore searched for peripheral-nerve symptoms in all patients found to be myxœdematous. Few patients presented with it as their primary complaint, but it was spontaneously mentioned by several others. On questioning it became clear that in most of them the paræsthesiæ were indeed distressing, but the degree of disability was difficult to assess in view of the mental lethargy and the predominance of more troublesome complaints, such as intolerance of cold. The mental state also made the determination of sensory disturbances difficult in many patients.

Our interest was intensified by the fact that one of us was studying the effects of metabolic disturbances on nerve conduction in man. It seemed a reasonable hypothesis that some of the slowness and clumsiness of the patient with myxœdema might be due to diminution of the rate of conduction of the nerve impulse. We were aware of the work of Lambert et al. (1951) showing that the twitch of an indirectly stimulated muscle was greatly slowed in myxœdema, and that this was responsible for " pseudomyotonic " tendon-reflexes. These workers had reported that the action potential elicited reflexly by tapping a tendon appeared after a normal delay, suggesting that the reflex arc, and hence the nerve-fibres, conducted with normal velocity. These studies, however, were made on the lower limbs, and our preliminary clinical investigations suggested that changes appeared earliest in the upper limbs, if indeed they were not confined to them.

Our clinical investigation disclosed a high incidence of symptomatic disturbances and many demonstrable motor and sensory changes confined to the hands. Sensory loss occurred exclusively in the part of one or both hands supplied by the median nerve. Motor phenomena involved only muscles in the hand supplied completely or in part by the median nerve. A few patients complained of paræsthesiæ involving the ulnar part of the hand. It is impossible to be dogmatic about subjective phenomena, but it should be noted that similar complaints are common in the carpal-tunnel syndrome (Kremer et al. 1953).

The clinical findings thus indicated a lesion of the median nerve in its distal part in all respects similar to that recognised as the carpal-tunnel syndrome. It was therefore of interest to find that the electromyographic study revealed that some of these patients had slowing of conduction restricted to the most peripheral part of the median nerve but not involving the ulnar nerve. The changes are those described in the carpal-tunnel syndrome (Simpson 1956).

The original hypothesis of diminished conduction of nerve due to hypometabolism was not confirmed. For this reason it is of some importance to examine this unexpectedly high incidence of carpal-tunnel syndrome in myxœdema, particularly as it has been reported in other endocrine disturbances—e.g., acromegaly (Kellgren et al. 1952) and pregnancy (Kremer et al. 1953). Further evidence that metabolic change in the nerve does not provide an explanation is seen in the lack of correlation between acroparæsthesia and the severity of myxœdema and in the relief obtained by operation in one case. On the other hand, there is a strong possibility that the syndrome is related to weight gain, and hence presumably to myxœdematous tissue under the flexor retinaculum at the wrist. Similar accumulation of soft tissue (with the possible addition of bone in acromegaly) could be postulated in each of the endocrine causes of the syndrome.

Summary

Median-nerve acroparæsthesiæ and paresis are common in myxœdema.

There is no generalised abnormality of nerve conduction, but slowed conduction in median nerve at the wrist can often be demonstrated.

The clinical and experimental findings indicate compression of the median nerves in the carpal tunnels.

The paræsthesiæ and paresis are probably caused by accumulation of myxœdematous tissue under the flexor retinaculum of the wrist.

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GRAVITATIONAL LEG ULCERS IN THE ELDERLY *

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SURGEON TO THE LONDON VARICOSE CLINIC

BOTH patients and their doctors tend to accept the presence of an ulcerated leg with a grim and determined stoicism born of years of unsuccessful treatment. In the elderly this attitude of mind may be so far fixed that the patient will not seek treatment again unless given the stimulus of renewed hope.

This paper is based on a study of 200 consecutive cases of gravitational ulceration, 93 of them in patients over 60 years of age. " Gravitational ulcer " is a generic term, devised by Dickson Wright (1931) to emphasise the production of œdema in the lower limb when the heart is at a higher level than the leg. For the leg to become œdematous, the patient does not have to be *erect*, as is sometimes supposed; a man sitting up in bed will not lose his pitting œdema, and it may not disappear even if he lies down. This is why so many ulcers fail to heal in bed. It is not until the foot of the bed is raised 9 in. (the patient lying flat with one pillow for the head) that the heart can be guaranteed to be below the level of the leg and a gravitational ulcer equally guaranteed to heal. But this is a method to be avoided, wherever possible, in the elderly.

Of the 200 ulcers, 150 (75%) were classified as varicose, 30 (15%) as post-thrombotic, and 20 (10%) as miscellaneous. Œdema is the common final cause in all three groups. Varicose veins produce œdema by an alteration in tissue-fluid hydrostatics due to an increase in average venular pressure (Rivlin 1956). So also does deep venous thrombosis. Miscellaneous ulcers arise in lower limbs whose œdema is due to the failure of weakened or poorly used calf muscles to maintain an adequate venous return (e.g., nemiplegia, rheumatoid arthritis, arthritis of hip and knee).

* Based on a paper read before the Medical Society for the Care of the Elderly, Oct. 12, 1957.

I should like to see inscribed over the portal of all varicose clinics the slogan *œdema rots*, for this is the clue to the healing of leg ulcers.

Diagnosis

Accurate diagnosis is essential not only for prognosis but also to make possible a comparison of results from different centres. Unfortunately there is tremendous variation in the criteria of diagnosis. In busy clinics there is little time for history-taking and examination. Ball and Phear (1957) reported no less than 16% of their leg ulcers as " cause unknown ", while Dodd et al. (1957), in the hospital records of 51 out of 174 patients, found no note as to *whether or not* there was a history of deep thrombosis.

In the London Varicose Clinic, forty-five minutes per patient is allowed for the initial interview. The history-taking alone may be very tedious, for many of these patients have a long and involved story to tell; but complete assessment is well worth while, for in almost every case it enables an accurate diagnosis to be made, the prognosis to be determined, and the patient told what the future holds. Treatment sessions are held separately.

I estimate that out of every ten gravitational ulcers about six are due to simple varicose veins, three to venous thrombosis, and one to impaired leg-muscle action; R. A. King (personal communication) agrees with these ratios; but Dodd et al. (1957) assume " most cases " to be post-thrombotic in nature, while Ball and Phear (1957) find 32% to be varicose.

Treatment

Since a chronic gravitational ulcer needs œdema for its perpetuation, all treatment must aim at abolishing œdema.

Bed

The simplest and most direct way of banishing œdema is to tip the patient so that her legs are higher than her heart; and this method has to be used for those who cannot walk. But unless there is continuous supervision by an enthusiastic physiotherapist who regards it as her duty to prevent her patient from stiffening up in bed, we are liable to end up with a healed ulcer in a desiccated mummy. The patient too—aided by non-stupefying analgesics—must play her part, persevering with exercise at the ankle-joints to revive calf-muscle action. This is far from " bed rest ": indeed, the patient must work very hard. Details must be strictly adhered to. A patient is allowed out of bed *only* to the toilet—a quick visit to the closet generates less œdema than a struggle with a bedpan —and may sit up in bed *only* for meals, thereafter lying down immediately. Apart from these five occasions she must lie with one pillow for the head. She may lie in any attitude she pleases, provided that the foot of her bed is permanently raised on 9 in. blocks.

Having said this, I must add that I used this method in only 3 of the 200 cases. 2 had severe rheumatoid arthritis and 1 hemiplegia. It is of course *not* a simple method. The patients have to be visited two or three times a week; they cannot work; their morale has to be maintained; and above all they learn very little that will help them in the future. In the elderly, moreover, it is the very antithesis of modern functional reablement.

Ambulation

Bandaging *alone* will not heal many ulcers; but ambulation will do so, provided the patient can walk in comfort. This explains why faith-healers achieve occasional successes and also why some ulcers heal, without our help, when the local nerve-ending is destroyed, pain ceases, and ambulation is resumed. It is also the basis of the 19th-century procedure of sectioning the saphenous-nerve, which at one time had quite a vogue (Hilton 1863).

Bandaging speeds up the healing process tremendously by taking up the slack left by the vanishing œdema and preventing its return in periods of inactivity; and for this reason bandaging is essential. But it is ambulation, not the bandage, that heals the ulcer.

Re-education

First and foremost therefore the emphasis in treatment is placed on ambulation and normal use of the limb. We ask the patients, " Which do you prefer, walking or standing?" Without a moment's hesitation they reply " walking ", and this is the key to their understanding of their own problem, for if they place a hand on their own calf while flexing and extending their ankle, they can immediately appreciate (as one explains it to them) that walking is more comfortable than standing because the action of the calf muscles pumps out some of the " swelling " from their leg. From that point they can be led to see that walking will prevent their leg from becoming tight and swollen in the bandage. We explain to them that rest does far more harm than good. Sitting in a chair with the legs up on a stool *impairs* venous return and is harmful. At this stage a further dawn of recognition takes place, and they say: " It's a funny thing, I always felt that rest made my leg more uncomfortable; but everyone told me to do it so I thought it *must* be right."

And now comes the most difficult and yet the most vital step of all, namely to insist that lace-up shoes are worn *all* the time and slippers completely abandoned. These patients nearly all wear slippers or loose open shoes in the house, and if possible, at work. It must be drummed into them over and over again that unless they wear lace-up shoes walking does not give them anything like full ankle movement, and hence full venous return, and that consequently much of the benefit of the treatment will be lost. Good shoes make all the difference between a comfortable and uncomfortable bandage, and consequently between a fully mobile and semi-invalid patient. After this it is easy to make them move their ankles while sitting, to point out the disadvantage of sitting close to the fire (which most of them have discovered for themselves), to warn against sitting with the legs crossed (because this retards venous return), and to arrange for the foot of the bed to be raised 9 in. if the ulcer is post-thrombotic. Finally they are given a card with the rules

USE YOUR LEG NORMALLY WHILST UNDER BANDAGE TREATMENT

1 Avoid standing STILL. Take a few steps whenever possible.
2 Wear lace-up Shoes, never slippers, in the house. If your feet feel hot and tired at the end of the day, change into another pair of SHOES **not** Slippers.
3 Do NOT sit with your legs crossed.
4 Do NOT sit with your legs out in front of you on a stool.
5 Sit NORMALLY but move your ankles up and down (as if beating time to music) every now and again.
6 WALK AS MUCH AS YOU PLEASE.
7 Do not sit close to the fire.
8 Never bath in the morning—only at night.
*9 Raise foot of bed on 9in. blocks.

*Strike out if this does not apply

clearly printed on it, not only to remind themselves of their new mode of life, but also to confront their well-meaning friends who say " but surely you ought to be resting your bad leg ".

The Bandage

Non-irritating

At first I followed Dickson Wright's (1929) advice and used ' Elastoplast ', with success (Rivlin 1951). But if skin irritation is to be avoided, we need an adhesive bandage that will not provoke a reaction from the dermis. ' Poroplast ' (Scholl) is well on the way to being such a bandage. But, so far as ulcerated legs are concerned, the porosity on which the manufacturers laid stress, has made comparatively little difference, because the ratio of skin pores to bandage pores is so overwhelming that the degree of ventilation provided can have little physiological effect. When Russell and Thorne (1955) compared porous elastoplast with equally porous poroplast they obtained better results with the latter because it contained virtually none of the irritating resins or rubbers which produce skin reactions.

Adhesive

In my view it is essential that leg bandages should be adhesive. Ulcers can, of course, be healed with non-sticky bandages, but most patients find that the tendency to take a peep at the ulcer, and perhaps apply a favourite salve, is almost irresistible. But what matters even more is that a large proportion of patients can never be trained (or only at great cost in energy and time) to bandage their own legs efficiently: they may make a passable show at it, but they do not take up the slack of their vanishing œdema nearly as efficiently as a professionally applied flexible adhesive bandage. Hence, if the bandage is non-adhesive, their ulcers heal far more slowly, and they are far more likely to become dispirited.

Flexible or Elastic?

The difference between " flexible " and " elastic " adhesive bandages is one of degree only, but it is important. " Elasticity " refers to " stretch and regain " properties, but in fact in elastic bandages the stretch is *greater* than the regain, and after a fortnight's wear—which is the standard time—the bandage is undoubtedly looser than when first applied, and does not take up the slack of the vanishing œdema. Towards the end of its clinical life it is not completely efficient. The " elastic " adhesive bandage is said to have a massaging action as the patient walks; but the " massage " comes from within, not from without. The muscle movement requires only a moderate degree of " give " in the bandage; in other words it is the *flexible* adhesive bandage, which has a moderate degree of stretch and in fact is no looser at the end of a fortnight than when first applied, that possesses the most desirable qualities for bandaging ulcerated legs.

Paste Under-bandage

At the London Varicose Clinic, local skin irritation has been much reduced since the introduction of Scholl's 3 in. flexible adhesive bandage (poroplast). I now see only 3 cases of irritation and allergy each year, as opposed to 50 or 60 previously. But I still use a paste under-bandage on the leg—for two reasons.

1. With a paste bandage underneath, irritation is further lessened and can be spotted and dealt with long before any generalised allergic reaction takes place. (A paste bandage does not protect a sensitive skin against bandages with irritating components, for these penetrate it.)

2. I have a clinical impression that some ulcers heal even faster as a result of the ingredients embodied in the paste bandages—usually some combination of zinc paste and ichthammol, urethane, and calomine.

I personally prefer the ' Dalzoband no. 4 ' for ease of application, though I believe that other ichthammol bandages are just as efficient. Unlike this, the unna's paste type of bandage dries very hard, producing uncomfortable ridges on the skin.

Application of Bandages

The art of bandaging is learnt only by apprenticeship. Ideally, bandage technicians for varicose clinics should be specifically trained, as are orthopædic plaster technicians at the moment. The following methods are now in use at the London Varicose Clinic:

Paste Under-bandage (Dalzoband No. 4—one bandage)

The paste bandage is applied in almost the same manner as a plaster-of-paris bandage, in that the ultimate aim is a *smooth* case (remember any ruckle will be bandaged into the limb) of equal thickness throughout, stretching from the bend of the knee to the base of the toes. We prefer to start at the bend of the knee, bandaging clockwise irrespective of whether it is the right or left leg, *laying* the bandage gently on without any pressure whatever. Each turn overlaps the previous one by at least a half its width so that the bandage nowhere appears transparent. We do *not* (as the manufacturer directs) " let the bandage go where it wishes ", but—with a persuasive hand pleating over any fullness in the turns—we guide it in a circular manner down the leg. The circular turns continue around the ankle to the toes, eschewing the figure-of-eight, which is liable to produce local constriction.

Flexible Adhesive Outer-bandage (Scholl's 3 in.—one and a half bandages)

Before the top bandage is applied, a strip of the adhesive bandage must be laid along the front of the limb from tibial tubercle to toes (fig. 1). If this is not done the edges of the turns of the top bandage will cut into the leg at the front of the ankle and over the shin, producing discomfort, limitation in walking, and œdema. This bandage begins at the base of the toes and ends at the bend of the knee. The circular turns are laid on *firmly* and *evenly*, each overlapping the next by just over a half. The method of circumnavigating the ankle is important, for on this depends much of the comfort of the bandage: arrange the turns so that the lower edge of the fifth turn lies exactly on the point of the heel (fig. 2), and then make the lower edge of the *following* turn lie at the junction of the tendo achillis with the calcaneum. Where the bandage does not fit, pinch it together and cut it off. Then continue clockwise up the leg to the knee.

Fig. 1—Completed ruckle-free paste under-bandage. The longitudinal anterior strip of flexible adhesive bandage prevents the outer bandage from cutting in to ankle or shin.

Fig. 2—Completed flexible adhesive outer bandage. Note method of circumnavigating ankle. The lower edge of the 5th turn is at the point of the heel, and the lower edge of the 6th at the insertion of the tendo Achillis.

Removal and Renewal

The first bandage should remain on for one week only, for this is the one that removes most of the œdema, and at the end of seven days it may be demonstrably looser than when first applied. For its removal we use special shears (Rivlin 1958), manufactured to our design by the Scholl Manufacturing Company. It is best to insert the shears under the bandage at the lateral border of the foot and cut along to reach the hollow behind the lateral malleolus; then cut up the lateral border of the leg along the muscular peroneal cushion, lifting the bandage off the skin as one cuts.

At the first removal we should see a leg virtually free of œdema, whose ulcer, if not smaller in area, is certainly more healthy-looking than a week previously, with a faint purple growing edge to its circumferential epithelium and early granulations within the formerly barren ulcer wastes. Continuation bandages should be applied as before until the ulcer is healed, remembering that the need now is probably not to squeeze out œdema but merely to hold the leg at its proper size. It is quite easy to overbandage legs, producing a thin pipe-like limb whose arterial inflow is undoubtedly disturbed. Unless patients are going on holiday, we make it a strict rule not to leave bandages on for more than a fortnight; otherwise autolysis from the ulcer discharge may cause local skin deterioration.

Results

In considering the immediate results of treatment three questions need answers:

1. How do the patients aged 60 and over compare with the younger ones?
2. Is there any outstanding difference in the speed of healing between the three groups of leg ulcers?
3. How rapidly can an ulcer be expected to heal?

On analysing the largest group, namely the *varicose* ulcers, we found that the average time of healing amounted to 10·2 weeks. The time averaged 11·5 weeks in those aged 60 and over and 9 weeks in the others (see table). But the average area of the ulcers when treatment was begun was over three times greater in the older than in the younger patients, and the rate of healing, expressed in square centimetres per fortnight, was three times greater in the elderly patients (see table). This accords with the suggestion that œdema causes gravitational ulceration; for, according to the clinical notes, œdema was far more pronounced in the older group—probably because the older patient has more opportunity and inclination to "rest". But, as soon as the œdema is banished, the ulcers heal as fast as in younger people.

In the case of the *post-thrombotic* and *miscellaneous* ulcers (see table), the ulcers in the older group remained under treatment longer, but again only because they were far larger to begin with. *Varicose* ulcers heal fastest of all.

RESULTS OF TREATMENT

Type of ulcer	Varicose			Post-thrombotic			Miscellaneous		
Age-group	20–59	60–90	All ages	20–59	60–90	All ages	20–59	60–90	All ages
No. of cases	77	73	150	22	8	30	9	11	20
Average healing-time (weeks) . .	9·0	11·5	10·2	11·2	15·0	12·8	10	16	13
Average size of ulcer (sq. cm.)	6·4	22·8	14·1	3·8	30·0	13·5	10	35	23·5
Average rate of healing (sq. cm. per fortnight)	1·2	3·6	2·6	0·7	4·0	2·1	2	5	4

Prevention of Recurrence

Briefly, the only ulcers that can really be cured are the varicose ulcers; but fortunately they form by far the largest group. A planned operation will rid these patients of their varicose veins, their tendency to gravitational œdema, and hence their ulceration. They need wear no form of support on their legs, can tear up their list of rules, and can behave as completely normal persons. Those who either do not wish to have an operation, or cannot have one, must be treated as the post-thrombotic group.

Ulcers of the post-thrombotic and miscellaneous groups cannot at present be fully cured although, of course, they can easily be healed; but an intelligent patient who understands the principles of œdema-prevention can keep his ulcer at bay without interfering very much with his normal life. He must keep faithfully to the rules, and *always* sleep with the foot of the bed raised 9 in. He should wear an elastic support on his legs. Neither elastic stockings nor the usual bandages are entirely satisfactory, but Messrs. Lastonet have produced a 5 in. × 7½ yd. (fully stretched) thin elastic net all-way stretch bandage † which moulds itself beautifully to the contours of the limb, is neither heavy, bulky, nor unsightly, and can be used for many months with frequent washing. Patients in the miscellaneous group must pay special attention to the re-education of the calf muscles.

Summary

The standard method of treatment at the London Varicose Clinic is described. Special importance is attached to the initial history and examination of the patient in order to classify the type of ulcer present as varicose, post-thrombotic, or miscellaneous.

Ambulation in proper footwear is by far the most important factor in treatment. Adhesive compression bandaging, using non-irritating materials, is ancillary to this but speeds up the rate of healing. Varicose ulcers can be expected to heal in ten weeks, post-thrombotic and miscellaneous ulcers in thirteen weeks. Instructions for applying bandages are given.

In the 200 consecutive cases of gravitational ulcer studied, elderly patients responded as rapidly to treatment as the younger ones.

True varicose ulcers can be cured by operation on the veins after the ulcer is healed. Post-thrombotic and

† Now available on form E.C. 10.

miscellaneous ulcers can be kept at bay if the patient observes the principles of œdema prevention and venous return. A new type of wide and light all-way-stretch supporting bandage is useful in the permanent aftercare of the post-thrombotic case.

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BLOOD-PRESSURE UNDER ANÆSTHESIA IN THE SITTING POSITION

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ONE of the main causes of brain damage or delayed recovery following dental anæsthesia may be its administration in the sitting position, according to Bourne (1957), who maintains that the blood-pressure may fall while nitrous oxide is being given, and that this indicates that the continued use of the sitting position for dental operations is unwise and likely to lead to permanent cerebral damage.

Since the publication of Bourne's article we have recorded the blood-pressure of 100 unselected patients presenting unpremedicated at the Eastman Dental Hospital. Their ages ranged from 5 to 65 years, and a breakdown of the cases into 5-year age-groups is shown in fig. 1.

Method

The blood-pressure was taken immediately after seating the patient in the chair and fixing the apron round his chest. In each case the anæsthetic was administered by one of us, by a medical or a dental graduate, or by a medical undergraduate under supervision, with little or no variation in the results obtained by individual anæsthetists. The operations lasted from one to eighteen minutes (fig. 2). In the position adopted the patient sat with the seat of the chair tilting backwards but with the back-rest upright and the head-rest immediately under the occiput, so that he was in the " sniffing the morning air " position. This is the position recommended for ease in nasal breathing.

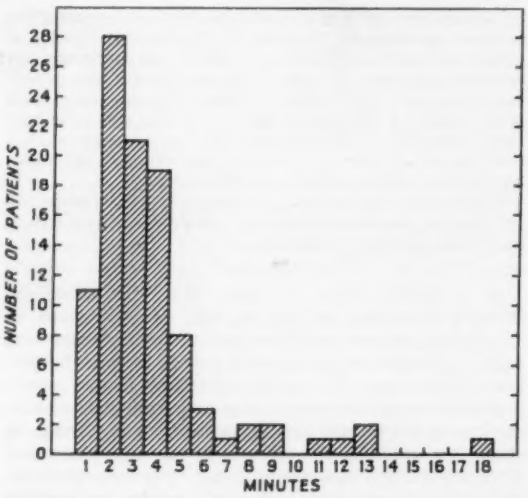

Fig. 2—Duration of dental operation in 100 cases under general anæsthesia in the sitting position.

The blood-pressure was taken at short intervals throughout the period of anæsthesia, five minutes after the patient had been removed from the dental chair to the recovery room in a wheel-chair, and again before the patient was allowed to leave the recovery room. In all the cases the technique of induction was identical with that used and taught in this hospital for many years; and except in special cases, induction was with pure nitrous oxide until respiration became automatic, with inspiration shorter than expiration. At this point oxygen was administered to the patient, starting usually at about 8% and gradually increasing during the operation. At the end of two minutes' operating the percentage of oxygen was usually increased to about 10%, and thenceforth by 1% at intervals of about a minute, even without any signs of anoxia. During the whole operation an adequate and effective mouth pack was kept in situ to prevent both the inhalation of foreign bodies and dilution with air.

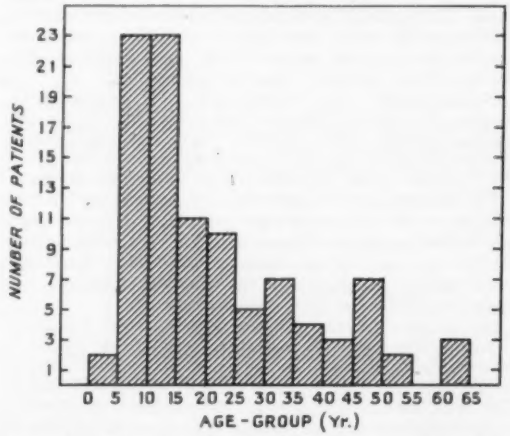

Fig. 1—Age-distribution of 100 patients submitted to dental operations under general anæsthesia in the sitting position.

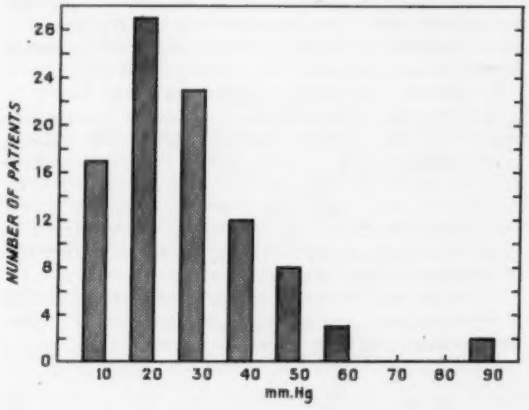

Fig. 3—Amount of rise in systolic blood-pressure in 94 cases during administration of general anæsthetic with patient in the sitting position for dental operation.

With this method of anæsthesia it was usual, at the end of five minutes' operating, for the patient to be receiving 12–14% of oxygen. If more extensive oral surgery was necessary and operating continued for more than ten minutes, the patient usually received 15%, 16%, or even 17% of oxygen with nitrous oxide. A rebreathing bag was not used unless the fractional rebreather on the McKesson machine was available, but in all the present cases no rebreathing bag was used, and consequently there was no retention of carbon dioxide.

The machines used were all tested on numerous occasions and gave oxygen percentages, under all conditions, within 1% of the amount indicated on the dial.

Results

In practically every case there was a rise above the initial blood-pressure. At the end of the period of anæsthesia, however, the blood-pressure fell, usually 5–10 m.m. Hg below the preoperative level, which might have been slightly raised through apprehension. It is, of course, impossible in these circumstances to get a blood-pressure reading under normal conditions without any stress or strain. However, in 94 cases systolic blood-pressure rose, at some point during the administration of the anæsthetic, above the preoperative and postoperative levels. The amounts of these rises are shown in fig. 3.

21 of these patients had an initial rise of blood-pressure followed by a fall on the introduction of oxygen. In some cases the blood-pressure rose again, but at no time during the anæsthesia was the level lower than the postoperative reading.

In 9 cases there was an initial fall in blood-pressure after the start of the anæsthesia, but this level was not below the postoperative reading and was followed by a rise. These patients were usually excitable or very nervous.

In the remaining 64 cases there was an initial rise which was maintained throughout the period of anæsthesia.

In 6 cases the level of blood-pressure during anæsthesia was maintained steadily at the preoperative value, but the postoperative level in all cases was below this. The series included a child with a patent ductus arteriosus and a patient with a history of epilepsy. No delayed recovery or unusual effects were observed.

Discussion

It can therefore be assumed that the frequency with which syncope or fainting takes place under simple gas-oxygen anæsthesia is insufficient to cause great alarm; otherwise at least 1 case would have appeared in the present series, which included several lengthy operations.

This is a comforting thought because it confirms the safety of the practice of a hundred years' use of the sitting position, which in experienced hands does not increase the patient's risk of postoperative sequelæ. It is generally considered that the sitting position is the safest for dental operations in the absence of an endotracheal tube.

If, however, the sitting position had been shown to tend to produce complications, it would be necessary to operate on every patient supine. This would create a grave difficulty because, if more than four teeth were to be removed at one sitting, an endotracheal tube would be indicated in every case. Since about two million dental anæsthetics are given each year in the United Kingdom alone, this would mean a very great increase in the amount of work for hospitals and anæsthetists.

We hope that the result of our investigations will be accepted as proof that no special risk attends the routine that has been used for so many years, provided that nitrous oxide and oxygen are the sole anæsthetic agents used.

Summary

In 100 cases of dental extraction under nitrous oxide/oxygen anæsthesia there was an initial rise in blood-pressure above the preanæsthetic reading.

This was usually maintained, but in some cases it fell with the introduction of oxygen, only to rise again to a level which was maintained to the end of the operation.

The blood-pressure fell to its preanæsthetic level or below within four minutes of the end of the administration of the anæsthetic agent.

No delayed recovery or untoward effects were observed.

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OTALGIA WITH ŒSOPHAGEAL HIATUS HERNIA

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SINCE 1956 we have seen three patients with a combination of earache and abdominal symptoms.

Case-reports

Case 1.—A woman, aged 55, was admitted with epigastric discomfort immediately after meals—in no way related to the type of food—and occasional heartburn. Elsewhere she had been found to have a large stone in the gallbladder, and this was suggested as the cause of her symptoms. But, as she gave no history of colicky pains, and as on cholecystography the gallbladder concentrated the dye well, one hesitated to ascribe all her complaints to the solitary gallstone.

When a more detailed history was taken, she mentioned that for years she had had a painful, itchy sensation in the right ear. Sometimes this became intolerable, and could not be relieved by scratching the external auditory meatus. She had been examined by various ear, nose and throat (E.N.T.) specialists, but no abnormality could be detected. After one such examination she had been given a prescription for bromide "for the nerves". When questioned further about her abdominal complaints, she gave the following significant answer: "I always have the sensation at mealtimes as if food sticks just here," and pointed to the lower sternum. "It is as if a bubble of air sticks here and troubles me. It then suddenly shoots through, giving immediate relief."

This aroused suspicion of an œsophageal hiatus hernia. Although the pain in the right ear was the chief complaint, the patient had mentioned this hesitantly because she thought it was completely unrelated to the abdominal symptoms for which she had been referred to the surgeon. Yet the ear symptoms can be logically explained by the presence of hiatus hernia. Although this combination of symptoms is not common, it is mentioned in the French literature. The stomach was therefore re-examined radiographically, but a hiatus hernia was not demonstrable in Trendelenburg position.

Cholecystectomy was decided upon. At laparotomy the presence of a solitary gallstone was confirmed, but the gallbladder appeared otherwise normal. The œsophageal hiatus, however, admitted four fingers with ease, and the cardiac end of the stomach could be made to slide up through the hiatus.

The hiatus was then narrowed by approximation of the crura posterior to the œsophagus until it admitted only one finger next to the œsophagus. Cholecystectomy was then performed. Finally the operative correction of the hiatus hernia was completed by gastropexy to the anterior abdominal wall (Boerema and Germs 1955, Boerema 1958).

For obvious reasons, we had refrained from telling the patient before operation that there could be a connection between the earache and the abdominal complaints. Immediately after operation she spontaneously volunteered that the pain in her ear had disappeared. She was much gratified, but rather surprised that the earache had disappeared after an operation through the abdomen! A year later she is symptom-free. The otalgia has not recurred.

Now on the alert for the presence of ear symptoms with hiatus hernia, we found two further cases.

Case 2.—A rather obese woman, aged 75, was admitted with upper abdominal complaints of at least 30 years' standing. She had burning pain in the epigastrium and behind the lower sternum after meals. This radiated through to the back between the shoulder-blades. She often had severe heartburn. All the symptoms were aggravated by lying down after meals. On bending forwards she had regurgitation of acid food into the mouth. With swallowing, food seemed to lodge behind the lower sternum; she had to " swallow twice " to get it down.

For years she had had an unpleasant painful itching in the left ear. This came on simultaneously with the pain behind the lower sternum.

On radiological examination of the œsophagus and stomach, a large " sliding " hiatus hernia was demonstrated; and, as she had been treated conservatively elsewhere without success, we decided to repair the hernia surgically. At laparotomy the stomach was reduced into the abdomen. The hiatus was narrowed by approximation of the diaphragmatic crura behind the œsophagus, after which an anterior gastropexy was performed.

Six months later she was symptom-free, having had no further pain in the ear.

Case 3.—A very obese woman, aged 71, had had cholecystectomy elsewhere 18 months before. She was well till about 10 months after the operation when she developed upper abdominal discomfort after meals, which was relieved only by vomiting. The symptoms were aggravated by bending forwards, but not by lying down.

For some months she had also had an irritation in the throat; a sensation as if there was a " lump " in the throat which she could not swallow down. At mealtimes, however, she had no difficulty in swallowing food. Associated with this discomfort in the throat, she had a painful, itchy sensation in the left ear. She had been referred to an E.N.T. surgeon, who could find no abnormality in the ears, pharynx or larynx, and she had been reassured and given vitamin-B tablets.

On radiography of the œsophagus and stomach, a large " sliding " hiatus hernia was found, which did not reduce in the erect position. At least a third of the stomach was in the chest.

She was put on a reducing diet with frequent small meals, and slept in an upright position. On this regime the abdominal discomfort diminished significantly, and the earache disappeared. With such marked improvement of the complaints we found operation on this elderly, obese woman not indicated for the present. She was therefore discharged with instructions to follow the above regime.

Discussion

Many workers have mentioned that the epigastric or substernal pain of œsophageal hiatus hernia may radiate through to the back, down the arms, or up to the base of the neck, and sometimes even to the mouth or to the angles of the jaw. In the French literature radiation to the ears is also mentioned: Hillemand and Wattebled (1953), Hillemand et al. (1954). Dubost and Blondeau (1956) emphasise that the disturbances caused by hiatus hernia may appear completely unrelated to the gastrointestinal tract, with the result that patients are referred to specialists in other fields. Hiatus hernia may for instance cause precordial symptoms which closely simulate angina pectoris. An apparently causeless secondary anæmia may exist, the hernia being discovered only after careful examination of the gastrointestinal tract. Reflex vagal disturbances may lead to crises of bradycardia with a fall in blood-pressure and loss of consciousness.

Hiatus hernia may also present with pain in the ears. This may be the chief symptom, as described in the first case. The mechanism of its production can be explained anatomically.

The vagus nerve, after leaving the skull through the middle compartment of the jugular foramen, gives off an auricular branch. This enters a small foramen on the lateral wall of the jugular fossa and traverses a special canal, the mastoid canaliculus, in the mastoid part of the temporal bone. It then divides into two branches which are distributed to the external auditory meatus and to a small area of skin over the mastoid process (Spalteholz 1921).

The vagus then passes down into the neck giving off its pharyngeal, laryngeal, and cardiac branches. In the thorax it forms the pulmonary plexus for the supply of the lungs and the œsophageal plexus. The œsophagus is supplied proximally by branches directly from the vagal trunk and distally by the œsophageal plexus.

Gray's Anatomy (1946) described various " reflexes " in connection with branches of the vagus. The " ear cough " is mentioned as one of the commonest. A plug of wax in the external auditory meatus may, by irritating the filaments of the auricular branch, be responsible for a persistent cough. Syringing the auditory meatus may similarly produce coughing, or, in children, vomiting; moreover, syringing the ear has been responsible for a sudden fatal syncope, by reflex irritation of the cardiac branches. Another common example quoted is the persistent cough which is common with enlarged bronchial lymph-glands in children; the irritation is referred to the superior laryngeal filaments.

Reflexes in connection with the vagus and its auricular branch are therefore not uncommon. Similarly, the phenomenon of otalgia with hiatus hernia can be explained as a referred pain along these vagus pathways. Irritation of the œsophageal filaments produces stimuli which are centrally misinterpreted as coming from the auricular branch. Thus a painful itching in the ear results. The vagus or its œsophageal branches may be irritated by pressure on the nerve in the hiatus, by stretching of the nerve over the hernial mass in the case of a large hernia, or by periœsophageal inflammation where the hiatal hernia is complicated by œsophagitis.

In the two cases where the hiatus hernia was surgically repaired the earache disappeared immediately after operation. The irritation of the vagus nerve was therefore probably caused by a stretching or compression of the nerve by the hernia.

Patients with a persistent, painful, itchy sensation in the external auditory meatus for which no local explanation can be found, and who may or may not have associated upper abdominal or substernal complaints, should therefore be examined for the presence of œsophageal hiatus hernia.

Summary

Three cases are described in which œsophageal hiatus hernia was associated with pain in the ear. The anatomical basis for this phenomenon is that both œsophagus and external auditory meatus are supplied by the vagus nerve, and the pain is probably referred. The earache disappeared after effective treatment of the hernia.

I wish to thank Prof. I. Boerema, head of the department of surgery, for encouragement and permission to publish these cases.

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CORTISONE IN THE TREATMENT OF ACUTE MILIARY TUBERCULOSIS

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" Surely every medicine is an innovation and he that will not apply new remedies must expect new evils."

FRANCIS BACON.

YESTERDAY cortisone was considered to be contra-indicated in tuberculosis; today considerable trials are being conducted using steroids in tuberculosis therapy. The case presented is one thus treated.

Case-report

A man, aged 64, had worked in an iron foundry for 36 years and latterly had been subject to mild bronchitis. 4 years ago he retired from the foundry and took to " odd-jobbing ". Just before Christmas, 1956, he worked 1 day in a local cotton-mill and then developed a " bad chest ", with left pleuritic pain and a cough. He became feverish and was losing weight rapidly. By Feb. 7 he had taken to his bed, finally not eating or drinking and becoming confused.

He attended the geriatric outpatient clinic on Feb. 21, 1957, complaining of left chest pain, dyspnœa, cough, loss of appetite and of weight, sweating, and occasional vomiting. He was somewhat confused and appeared very ill indeed. He coughed day and night, with half a cup of yellow sputum a day; no hæmoptysis. He was pale and wasted; temperature 100·4 °F, pulse-rate (regular) 142 a minute, respiration-rate 28 a minute.

His trachea was central, chest expansion fair and symmetrical, percussion-note resonant with slight impairment at the left base, and breath sounds vesicular with numerous medium rales, especially left base. No abnormalities were found in other systems, apart from dulled level of consciousness.

A provisional diagnosis was made of unresolved pneumonia with effusion or empyema; he was admitted. His hæmoglobin was 64%, leucocyte-count 6400 per c.mm., erythrocyte-sedimentation rate (E.S.R.) 34 mm. in the first hour. He appeared to be dying and was considered unfit for X-ray screening. Aureomycin was given.

Over the next 5 days there was no change; the pyrexia continued. The chest remained surprisingly quiet, with fewer moist sounds at bases than on admission. The impairment at the left base had disappeared and a diagnostic pleurocentesis was not performed. Sputum gave growth of normal flora. Electrocardiogram normal. A radiograph of the chest showed " extensive miliary mottling in all zones of both lung fields. Appearances of miliary tuberculosis or pneumoconiosis ". Examination of eyes showed a tubercle in the lower right conjunctival sac and two patches identical with miliary tubercle in the right fundus.

Mantoux 1/10,000 was negative The cerebrospinal fluid (C.S.F.) was opalescent, pressure 135 mm. Protein 80 mg. per 100 ml., globulin slight increase, Lange 1111100000, chlorides 565 mg. per 100 ml., sugar less than 20 mg., cells 36 per c.mm. (polymorphs 50%, lymphocytes 50%). No organisms. Wassermann reaction negative. Culture yielded no growth. Streptomycin 1 g. b.d. and isoniazid 100 mg. t.d.s. started.

On March 2 the Mantoux test was still negative. After some slight initial improvement, the patient again appeared to be dying. The dose of isoniazid was increased to 100 mg. 6-hourly and cortisone acetate 25 mg. q.d.s. was begun. At this stage his weight was 8 stone.

After a few days he began taking some food and his condition improved slowly, but later more rapidly. Streptomycin was reduced to 0·5 g. b.d. The C.S.F. contained protein 44 mg. per 100 ml., sugar 49 mg., cells 72 per c.mm. (polymorphs 40%, lymphocytes 60%). Guineapig inoculation was negative.

5 weeks after admission weight 9 stone. On the chest radiograph, " miliary nodulation, though still extensive, appears less accentuated ". E.S.R. 50 mm. in the first hour.

By April 14 he was very much better. The cortisone had been gradually discontinued. Mantoux 1/10,000 became positive. 24-hour specimens of urine and sputum throughout yielded no acid-fast bacilli. The E.S.R. remained raised.

On June 6, the chest radiograph showed " very marked improvement, especially compared with original films. Still faint reticulation and residual fibrosis at both bases ". Later in June his weight was 10 stone, his E.S.R. fell, and he was allowed home but continuing therapy. The streptomycin and isoniazid were finally discontinued in August.

In September the chest radiograph continued " to show improvement with some residual fibrosis ". He is still under outpatient observation and remains very well.

Discussion

This man, originally Mantoux-negative, had had mild chronic bronchitis for years after a lifetime in an iron foundry. There is, therefore, the possibility of some degree of pneumoconiosis, and this is supported by the chest radiographs. The later films show a fine reticulation which could be a reaction to dust or a streptomycin-treated-tuberculosis pattern. He gave a vague history of having had " pneumonia " several times in 1950, but was treated at home and never radiographed.

Although acid-fast bacilli were never isolated from his sputum, urine, or C.S.F., the response to streptomycin and isoniazid, together with the radiological picture of his chest, justify a diagnosis of miliary tuberculosis. The fact that his Mantoux later became positive is also evidence in favour of such a diagnosis, though tuberculin sensitivity is occasionally depressed in acute stages of the illness. The diagnosis of pneumoconiosis alone is excluded by the clinical picture and the final response to the therapeutic measures taken. Until recent years acute miliary tuberculosis was considered a disease of young people, but more cases are now being reported in older ones.

There were no physical signs of meningitis, except the abnormalities in the C.S.F.; hence intrathecal therapy was not given, in the belief that isoniazid, given orally, freely enters the C.S.F., and that this would be sufficient in this particular case.

Because of the ability of cortisone to alter fibrinogenesis and thus prevent the formation of adhesions, it is being used in tuberculous meningitis in many centres (Shane and Reilly 1953, Ashby and Grant 1955). Wasz-Höckert (1954) describes corticosteroids as " routine " in the treatment of tuberculous meningitis in Helsinki. Choremis et al. (1957) have used similar treatment in children. All believe that cortisone has a definite beneficial effect on the clinical course and final result.

When cortisone is used, the appropriate antimicrobial therapy must be given. It is most useful in overwhelming toxic states, where immediate improvement of the patient's condition is imperative. Cortisone does not interfere with phagocytosis, but deprives the monocytes of much of their capacity to inhibit the intracellular accumulation of bacilli (Lurie 1957). The result, therefore, is more primary tubercles, which are small and incompletely caseous, swarming with bacilli, with very little interstitial reaction.

Lurie has pointed out that cortisone, by virtue of its anti-inflammatory effect, greatly hinders lymphogenous and hæmatogenous dissemination of bacilli. When tuberculosis spreads under the influence of cortisone it does so by contiguity, with the movement of tuberculous macrophages.

Shmelev (1957) has shown that cortisone given in the initial stages of disseminated tuberculosis can decrease the number and size of foci, reducing the exudative reaction, and that using cortisone with antituberculous drugs gives a better therapeutic effect than using antituberculous drugs alone.

McLeod Riggins (1957) says that cortisone in tuberculosis has a threefold effect: (1) anti-inflammatory (whether

useful or not?); (2) anti-allergic (partial suppression of the hypersensitive state, which may be useful in various forms of acute tuberculosis), and (3) therapeutic, especially if tuberculosis is complicated by adrenocortical insufficiency. In this case cortisone was administered initially for the last effect—as a " tonic ". The patient appeared to be dying and it was felt cortisone might just turn the scale.

Pharmacological, and not toxic, doses must be used, for the danger of hypercorticism is real; and the suppression of adrenocortical function, when cortisone is stopped after a long course, may not only produce addisonian symptoms but also reduce resistance to infection.

Chenebault (1957) reported a series of 117 varied cases of tuberculosis which he treated with cortisone or allied steroids. Spectacular results were seen in the miliary cases in 5 to 6 weeks. Moribund patients became convalescent in 6 weeks. Radiological improvement was " extraordinary ", with an equally rapid general transformation.

In conclusion, as always when spectacular results are reported, caution is very necessary. As Kaufmann (1957) says, cortisone treatment is indicated particularly in patients with a toxic course and in those with a tendency to excessive mesenchymal defence reaction. A careful selection of patients is indispensable.

Summary

A man of 64 appeared moribund from miliary tuberculosis. When given cortisone (in conjunction with streptomycin and isoniazid) he improved strikingly, and later he was discharged fit.

Cortisone is indicated in selected cases of tuberculosis, where the course is toxic or the mesenchymal reaction excessive. Antituberculous drugs must be given as well.

I am grateful to Dr. W. H. Lloyd, consultant geriatrician, for permission to publish this case and for the encouragement he has given me throughout. I also want to thank Dr. D. Plowman and Dr. T. D. O'Brien (registrars in the geriatric unit), Dr. D. A. H. Walton, Dr. E. Ratner, Dr. C. H. Adderley, and Dr. L. B. Hardman.

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New Inventions

BED WITH BEDPAN

THE bedpan, as ordinarily used, has many disadvantages, and patients have expressed approval of a bed which I have designed to overcome some of the objections.

A standard type of hospital bed is modified so that part of the frame containing the mattress is extensible (fig. 1). Beneath the mattress, resting in a light metal frame, is a movable tray which can be raised to the level of the mattress by means of two arms on either side. The tray contains the bedpan, which can be easily inserted or removed by means of a movable handle: when not in use, this is flush with the surface of the tray. When the bedpan is needed, the slots at the foot of the bed are opened, and this allows the movable part of the frame to be extended. When it has been extended enough to clear the underlying tray (fig. 2), the screw on the side of the movable part of the frame is tightened to prevent further extension. The tray containing the bedpan is then raised into position so that it comes to rest at the level of the top of the mattress (fig. 3) and the patient can now slide on to the seat.

If necessary, the locking screw may be released and the bed further extended to allow the patient's feet to come down to the floor, enabling him to assume the correct position for defæcation. When the pan has been used the legs are raised by nurses and placed on the mattress. The screw is released and the frame partially closed; the screw is then tightened and the patient slides back on to the bed.

A lid is applied to the receptacle, which is lifted out of the tray, the tray is then lowered. The lock holding the movable part of the frame in position is then released, the bed is closed, and finally the slots at the foot of the bed are shut. Nurses have found the bed easy to work, but in the prototype the tray has proved rather heavy. Further improvements suggested are a lighter tray, made from aluminium and covered with 'Formica' or polyethylene, and a plastic receptacle, which should have a spout anteriorly instead of being circular.

A standard hospital bed of this type has been modified by Messrs. James Sherret and Sons, Brechin.

Stracathro Hospital,
Brechin, Angus

J. REAY ARMSTRONG
M.A., M.D. Cantab.

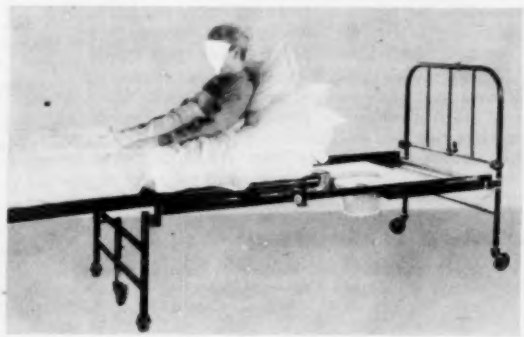

Fig. 2—Extended position.

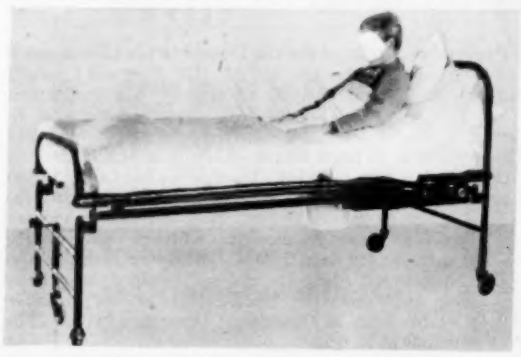

Fig. 1—Bed in ordinary position, closed.

Fig. 3—Extended position with tray containing bedpan elevated and ready for use.

Reviews of Books

Australia in the War of 1939–1945

Medical Series. The Island Campaigns. ALLAN S. WALKER, M.D., CH.M., F.R.A.C.P. Canberra: Australian War Memorial. London: Angus & Robertson. 1958. Pp. 426. 35*s*.

OUR soldiers in Burma talked of themselves as "forgotten men", but some of them who heard the late Brigadier J. A. Sinton, V.C., on the Australian conquest of malaria realised at the time how little they knew of the even less publicised war in New Guinea and the near-by islands. The conditions, climatic and geographical, were not unlike those in northern Burma: heavy rainfall, flooded rivers, lack of roads—and malaria. No-one has yet written a connected account of the work done by Sir Neil Hamilton Fairley and his associates on experimental malaria and the applications of their results to an army fighting a mobile war in an area where malaria is hyperendemic. Public imagination was stirred by the patient and inconspicuous work which gave us better weapons of war; but if ever a war was won "out of sight" it was at Cairns. Since then the methods have been improved, and in peace it is generally true that it is poverty rather than ignorance which allows malaria to survive. This book has much to say of Fairley's work in the laboratory and in the field, but because it is a chronological account of the medical services in campaigns often fought simultaneously the account is disconnected.

Because of the similarity in conditions, the book will be of most interest to those who fought in Burma; but there were some obvious differences. Air support and supply seem to have been on a smaller scale in the islands, but far more use could be made of the sea: the natives were more numerous and usually friendly and helpful: the numbers engaged were less and there was no big battle comparable with the crossing of the Irrawaddy. Both were junior officers' wars in which success and failure were obvious to everyone. In both there was general agreement on the main problems of military medicine: forward surgery followed by quick evacuation of the wounded; the malarious to be held near the line until fit for duty; preventive medicine not the responsibility of the "sanitary squad" but of every man in every rank.

This is a very interesting book but not an easy one to read. It seems that every medical participant is mentioned by name; each stage of evacuation is detailed at every point; and every move of each field ambulance is marked on the map. For those who fought elsewhere the book would be better for wider survey of the campaign. Pictures and maps are abundant and to the point.

Diseases of the External Ear

BEN H. SENTURIA, M.D., associate professor of clinical otolaryngology, Washington University School of Medicine. Springfield, Ill.: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1957. Pp. 211. 63*s*.

DISEASES of the skin of the external auditory meatus are hard to treat. The otologist is well qualified to examine the ear canal but his training in dermatology is often insufficient to differentiate the various manifestations of skin disease there. The dermatologist, on the other hand, is usually not equipped to examine and apply treatment to the external meatus. Otitis externa has thus been relegated to a therapeutic no-man's-land with little basic research to aid those striving after logical treatment based on pathological and ætiological facts.

Dr. Senturia and the ten colleagues who helped him have done a great deal to fill the gaps by drawing on their large experience of civilian and Service patients. In a well-documented monograph the many ætiological factors are discussed and the various lesions of the external canal described. In a series of animal experiments otitis externa was reproduced by means of bacterial contamination combined with trauma and/or lipid removal. Among the most important causes is the loss of the protective layer of waxy sebaceous secretions in times of stress, during swimming, &c. The section on treatment includes advice on preventive protection of the meatal skin by wax-like ointments. The book goes a long way to formulate a rational approach to this troublesome condition.

Neuritis, Sensory Neuritis, Neuralgia

R. WARTENBERG, M.D. New York and London: Oxford University Press. 1958. Pp. 444. 68*s*.

BASED on his own experience and illustrated by a number of case-records, this book was completed by Dr. Wartenberg shortly before his death in 1956. It emphasises the importance of mononeuritis—neuritis of a single peripheral nerve—either solitary or in association with neuritis of other peripheral nerves. It does not deal, except for the sake of contrast, with polyneuritis of the Guillain-Barré and allied types. The book contains a substantial bibliography (the author's assurance that he has actually consulted the items he refers to may startle some readers).

One of his main purposes is to demonstrate that a mononeuritis may result from a general systemic affection and to emphasise the clinical importance of isolated infectious mononeuritis. It is stimulating to read the vigorous attack on prolapsed intervertebral disc as a cause of sciatica and to consider the rival claims of sciatic neuritis; but many will think that in this as in other directions the claims of "neuritis" are pushed too hard, especially since the diagnosis is purely clinical and unsupported by any pathological evidence.

Biographical Memoirs of Fellows of the Royal Society

Vol. 3. London: The Royal Society. 1957. Pp. 328. 30*s*.

THIS volume contains twenty-one notable biographies, each preceded by a portrait, often of unusual excellence (one of a botanist is appropriately in colour). About a third have important medical interests. Arthur Felix was one of the unique personalities of medical bacteriology, who will be remembered for his work in connection with the Weil-Felix reaction and for his discovery of the H and O antigens of organisms of the proteus and enteric groups. Percival Hartley's outstanding services were concentrated on therapeutic science and biological standards. Albert Jan Kluyver left a record of service to microbiology that will be hard to equal. Henry Nicholas Ridley, a botanist, published papers of medical interest including one on Chinese anti-opium drugs. Frederick Soddy, a chemist, was awarded a Nobel prize for his part in the conception of isotopes. John William Trevan, the research director of the Wellcome Foundation, did important work in pharmacology; he once said modestly that he had had the satisfaction of starting a number of hares, most of which had finally been caught by others. Hubert Maitland Turnbull had an influence in pathology far beyond the London Hospital; he had a genius for accuracy of observation and meticulous attention to detail, which he applied with fervour to everything he did. Other biographies concern astronomers and mathematicians and are illustrated with rows of forbidding formulæ and equations.

This splendid book should enter all scientific libraries and all the major medical ones.

Preventive Medicine for the Doctor in his Community (*An Epidemiologic Approach.* 2nd ed. New York and London: McGraw-Hill. 1958. Pp. 689. 77*s*. 6*d*.).—The first edition of this book by Prof. H. R. Leavell, of Harvard, and Prof. E. Gurney Clark, of Columbia University, appeared in 1953.[1] The new one is 60 pages longer, chiefly because a chapter on oral disease has been included. The title has been altered from *Textbook of Preventive Medicine* and now indicates that the book is aimed at the student and practising doctor and not the specialist in preventive medicine, although there is much that the specialist can learn from it. The arrangement has also been changed and the chapters are grouped into Basic Principles; Application of Principles; and Public Health—Preventive Medicine as Organised Community Action. The book is unique in its field.

1. *Lancet*, 1953, ii, 170.

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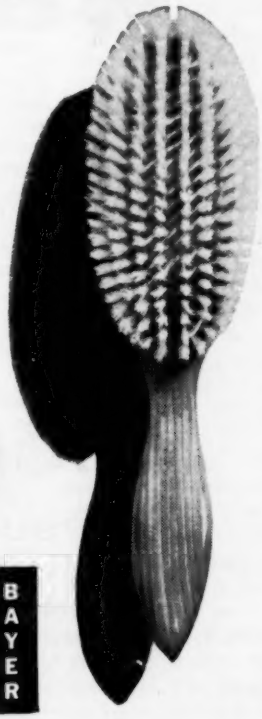

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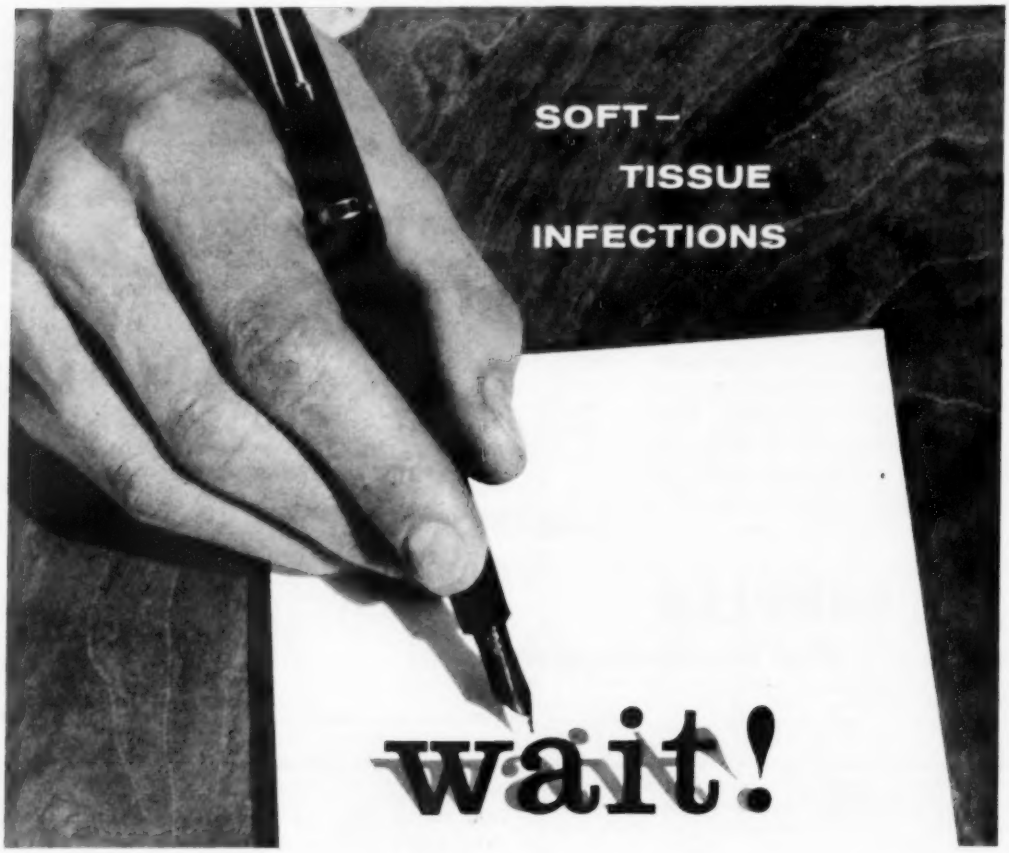

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THE LANCET
LONDON 28 JUNE 1958

Surgery for Pulmonary Tuberculosis

THE research committee of the British Tuberculosis Association began in 1952 to plan a comprehensive survey of the results of major surgical treatment of pulmonary tuberculosis. They were joined by the Society of Thoracic Surgeons of Great Britain and Ireland and aided financially by the Medical Research Council. The first report of this interesting joint enterprise has just been published.[1]

Seventy-four thoracic surgeons in the United Kingdom provided information about patients operated on during a period of twelve months in 1953 and 1954. Reference to the theatre-lists of the cooperating hospitals showed that only 12 operations were not reported—a remarkable achievement. 8236 operations were recorded. This was probably 1 operation for every two or three patients with infectious sputum during the period, which indicates the magnitude of the flood of surgical treatment that followed the discovery of effective chemotherapy. 6050 patients had "active" disease limited to one lung without such preoperative complications as empyema or fistula. 3100 underwent some collapse operation—all but 405 a thoracoplasty—and 2950 had the whole or part of the lung removed. The report deals with the two-year follow-up of these 6050 patients. Such a survey requires willing cooperation from a large number of people—surgeons, physicians, and registrars. If the record form is too complex, the information put on it by the clinicians may be less complete and accurate than if only a few simple facts are required. Those who planned the investigation rightly chose to sacrifice detail for the sake of comprehensiveness and accuracy; and it must have been difficult to decide what detail to omit. It is unfortunate that in one respect they seem to have chosen wrongly; for details of chemotherapy were so scantily recorded that, according to the report, no use could be made of them at all. The supreme importance of the correct choice of drugs and dosage and of prolonged administration was, of course, far less widely known in 1952 than it is now.

Because of this serious deficiency, the recorded results of surgical treatment can be used only for internal comparisons, and even here the observed differences must be interpreted cautiously, for it is not known whether the groups on the two sides of each comparison were comparable in respect of the most important prognostic factor—drug treatment. Certainly the results cannot be translated into present-day practice without reserve. For instance, as many as 20% of patients without cavitated lesions had had either no chemotherapy at all or less than six weeks' chemotherapy at any stage before operation. Even among the 4773 with cavities 4% had had no chemotherapy; and 45% had had infectious bronchial secretions in the three months before operation. The presence of drug-resistant strains in pretreatment cultures was not recorded, no doubt because drug-sensitivity tests were not being done as a routine in all centres—nor were they being performed by the same or comparable techniques. Possibly this difficulty could not have been overcome; but it seems a pity that so much valuable information about the influence of chemotherapy on surgical results had to be left out of the survey.

The investigation has nevertheless yielded many valuable findings. Two years after operation 85% of the whole 6050 patients were fit for work and had no signs of "active" tuberculosis. A further 4% had no "active" disease, but for various reasons were unfit for work. 6% still had "active" disease, and 3% had died during the period (2% were untraced). Of the 2695 who had a thoracoplasty 2·3% died within two years. 1392 had a lobectomy and 2·9% died. With segmental resection the mortality was only 1·4%; but with pneumonectomy it was 10·6%. These figures should not, of course, be used to compare the efficacy of the various operations, for they were done for different types of lesions and on different categories of patients. For instance, 51% of those with cavities had a thoracoplasty and only 41% a resection, while the corresponding proportions among those without cavities were 20% and 76%. Collapse operations were more usual in the old than the young and less common in women than men. The closest approximation to a valid comparison between resection and thoracoplasty for similar types of disease can be obtained from studying the patients with cavitated lesions confined to the upper lobe. There were 3514 of these. In general, the more favourable cases were chosen for resection. Thus, fewer had infectious sputum, healed contralateral disease, a history of five years or more, and impaired pulmonary function. Despite this, the two-year results were similar: following resection 89% had no "active" tuberculosis and 2·8% had died; whereas after thoracoplasty 88% had no "active" tuberculosis and 2·3% had died. Further analysis showed that thoracoplasty tended to produce slightly better results in the less favourable cases. In patients with both contralateral disease and recently infectious sputum there were, after two years, 3% deaths and 86% with no "active" tuberculosis among those who had undergone thoracoplasty, compared with 6% and 83% among those who had undergone resection.

As expected, bronchopleural fistula proved an important complication of surgical treatment. A fistula developed in 5% of patients after resection, but in a little less than 1% after collapse (and 6 of the 19 fistulas in the thoracoplasty patients followed a later resection). Infected fistula with empyema was five times commoner with cavitated lesions than with non-cavitated lesions, and arose three times more commonly in patients with infectious sputum within the three months preceding operation than in others. Fistula was commoner on the right than the left side. The prognosis with infected fistulas was poor; after two years, only 41% of patients

1. Major Surgery for Pulmonary Tuberculosis. By R. S. FRANCIS and M. P. CURWEN. London: Staples Press. Pp. 96. 1958. 12s. 6d.

in this category were fit and free from "active" tuberculosis, and 22% had died. With better drug treatment and more discriminating choice of patients for surgical treatment, the risks of this grave complication should now be considerably smaller.

One of the current problems in surgical treatment is whether to resect portions of lung containing non-cavitated tuberculous nodules in patients who have been treated by long and effective drug regimes and whose sputum, gastric contents, and laryngeal swabs are not found to contain tubercle bacilli. This survey certainly shows that such patients are likely to fare well after surgical treatment. There were 843 treated by resection or collapse operations who had either never had positive results of sputum examinations or not had a positive result in the six months preceding operation. By the end of two years 0·7% had died, 2·3% still had "active" tuberculosis, and 95% were free from "active" disease, almost all of these being fit for work (2% were untraced). The results can be expected to be better with more efficient chemotherapy. But these figures cannot be validly used to provide a reason for surgical treatment in such cases; for there are no two-year follow-up results for comparable patients treated without operation. The results without surgery may be as good or better. Another problem is whether to treat surgically those patients with persisting cavities but no evidence that tubercle bacilli are being excreted in the bronchial secretions while chemotherapy is continued. Here also the survey gives little help. There were 1354 patients with cavities who had not had a positive sputum result for more than six months before operation. After two years 2·1% were dead and 4·9% still had "active" disease; 91% had no "active" disease (2% were untraced). But we do not know what chemotherapy these patients had had before and after operation; nor do we yet know what happens to patients with persisting cavities treated by efficacious drug regimes. Some facts have been established by examining resected specimens of lung after treatment of different durations[2]; others are being obtained by following up patients who are not operated on. But it is doubtful whether it is at present possible to establish a rational treatment of both these groups of patients. Certainly no dogmatic statements of policy can be anything more than expressions of belief.

Carefully controlled studies of the experiences of patients of different categories randomly allocated to surgical and non-surgical groups could give valuable information. Possibly in 1952, when the British Tuberculosis Association survey was planned, the time was not ripe for such an investigation. Surgical treatment was popular, and long-continued chemotherapy had been little used. Possibly there would have been too few physicians and surgeons with sufficient belief in the efficacy of chemotherapy to provide adequate numbers of patients. Even so, it is a pity that the attempt was not made, for it seems likely that the pendulum has now swung so far the other way that such an investigation would still be unacceptable—this time because too many clinicians might be unwilling to cooperate, having seen the apparently excellent results of sustained chemotherapy without surgical treatment. Operations to prevent an unknown and probably small risk of relapse in the remote future do not generally commend themselves to physicians.

This, despite its imperfections, is an important survey, showing how much can be achieved by large-scale cooperation among clinicians. It has been said of the survey that it is "doubtful whether in any other disease it would have been possible to present such a comprehensive picture of the results of surgical treatment . . . the patients being treated and observed in an administrative framework almost ideally suited to large scale clinical research of this nature".[3] Chest physicians and surgeons are well placed to carry out such work through their professional organisations: the British Tuberculosis Association, the Tuberculosis Society of Scotland, the Thoracic Society, and the Society of Thoracic Surgeons. Several useful cooperative investigations have been made in the past few years by the British Tuberculosis Association [4] and the Tuberculosis Society of Scotland [5]; and the former is collaborating with the Royal College of Obstetricians and Gynæcologists in a study of endometrial tuberculosis [6] and with the Society of Thoracic Surgeons in the survey of major surgery in pulmonary tuberculosis. Next week the Association will be discussing this report at its annual conference, to be held in London.

Isotopes in Absorption Studies

ISOTOPE-LABELLED fats, proteins, and vitamins are being keenly used for the study of intestinal absorption, even though some have not proved as useful as was predicted. In 1949 STANLEY and THANNHAUSER [7] noted increased radioactivity in the blood after the feeding of ^{131}I-labelled olive-oil. Subsequently LAVIK [8] and CHINN [9] and their co-workers developed the use of ^{131}I-labelled protein as a test of pancreatic function, pointing out that the rise in plasma values depends on the ability of the pancreas to digest labelled protein and of the normal intestine to absorb at least 90% of the digested protein. The validity of the technique rests on the assumption that the iodine tag remains firmly attached during the passage of the fat or aminoacid through the intestinal cell. Both TURNER and DUFFY [10 11] and REEMTSMA et al.[12] with improved techniques have presented evidence that this assumption is correct.

2. Stewart, S. M., Turnbull, F. W. A., Macgregor, A. R. *Tubercle, Lond.* 1956, **37**, 388.

3. Leading article, *ibid.* 1958, **39**, 183.
4. *Tubercle, Lond.* 1952, **33**, 297. *ibid.* 1953, **34**, 74. *ibid.* 1954, **35**, 203. *ibid.* 1957, **38**, 249. *ibid.* p. 99. *ibid.* 1958, **39**, 76.
5. *Brit. med. J.* 1957, ii, 1131. *Tubercle, Lond.* 1957, **38**, 375. *ibid.* 1958, **39**, 129.
6. Sutherland, A. M. *Tubercle*, 1957, **38**, 46.
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10. Turner, D. A., PH.D. thesis, University of Ontario, London, Ontario, 1956.
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Both groups used ^{131}I-labelled oleic acid and ^{131}I-labelled triolein in developing a specific test for pancreatic insufficiency. The basis of the test is that triolein (a neutral fat) requires pancreatic lipase for its hydrolysis before absorption, and ^{131}I-labelled oleic acid (a fatty acid) can be absorbed normally in the absence of pancreatic lipase. In diseases of the intestinal wall, absorption curves of both substances are depressed—for example, in adult cœliac disease, intestinal lipodystrophy, and regional ileitis. A normal curve after the administration of either ^{131}I-labelled triolein or protein should effectively eliminate pancreatic insufficiency as a cause of diarrhœa. In obstructive jaundice evidence of pancreatic insufficiency obtained in this way is usually associated with carcinoma of the pancreas.[13] Neither ^{131}I-labelled triolein nor ^{131}I-labelled albumin is of use in detecting localised neoplasm in the body of the pancreas.

Such a simple interpretation of the tests cannot be applied in cases of obstructive jaundice. In one of the more detailed investigations KIRSNER et al.[14] noted low curves in 2 patients with carcinoma of the common duct, in whom the pancreatic enzymes were normal and the pancreas and small intestine were normal at necropsy. Moreover, in cases of high-grade pyloric stenosis the results can be anomalous; and the curves might be particularly misleading in those occasional patients who have pyloric stenosis and intermittent diarrhœa. KIRSNER et al.[14] found excellent correlation between the curves of a ^{131}I-labelled triolein and the amounts of fat actually excreted in the stools. There was in addition good correlation between the proportion of radio-isotope absorbed and the degree of steatorrhœa, except in patients with regional ileitis. It might perhaps be inferred that the correlation is somewhat fortuitous since improvement in the absorptive curves in adult cœliac disease, for example, may long precede decrease of steatorrhœa. KIRSNER et al. noted that the absorptive curves correlated closely with the vitamin-A curves, but they concluded that it was easier to measure radioactivity in the plasma than the vitamin-A level. RUFFIN et al.,[15] who have had extensive experience with ^{131}I-labelled lipids, concluded that the tests were simple and reliable, accurately reflecting fat absorption. If patients who had undergone gastric operations were excluded, there were no false positive results; but the tests might be normal in patients with organic intestinal disorders. In 60% of patients who had undergone operation for peptic ulcer with or without vagotomy, they noted impaired absorption of triolein. Such a finding signified either impaired digestion or impaired absorption, but since the levels following oleic acid were usually normal the abnormalities must be primarily of digestion rather than of absorption. Nevertheless it must be admitted that labelled fats and proteins do not give any better results than chemical methods in the detection of absorptive defects.[16] The correlation of fæcal fat with plasma curves or isotope fæcal excretion is not invariably close, and, in patients in whom the defect is slight, interpretation is difficult. Indeed, it would be surprising if the absorptive curves of the isotopic material were completely reliable since they are open to the errors of interpretation common to any absorptive curve.

If studies with isotopic oleic acid, triolein, and amino-acids have been disappointing, because of their inability to provide clear-cut answers in doubtful cases, vitamin B_{12} labelled with ^{56}Co, ^{58}Co, or ^{60}Co has led to a great increase in the knowledge of the absorption of cyanocobalamin—knowledge which can be put to practical use.[17–19] Three techniques have been used—measurement of the radioactivity in the fæces,[20] measurement of the hepatic uptake,[21] and measurement of the proportion excreted in the urine.[22 23] When these techniques were applied to patients with intestinal disorders it soon became evident that lack of intrinsic factor was by no means the only cause of failure of absorption of vitamin B_{12}, and that different parts of the intestinal tract differed in their capacity to absorb the vitamin. Furthermore, there is a limit to the amount of vitamin B_{12} that can be absorbed from the gut.[24] The optimum dosage of labelled vitamin B_{12} falls within the physiological range for absorption of this vitamin (0·5–2 μg).[22] If extremely large doses of vitamin B_{12} (500 μg. or more) are administered by mouth or by rectum this limiting effect may be overcome by the "mass action" effect both in pernicious anæmia [25] and in primary malabsorption syndrome.[26] CASTLE [27] suggested that vitamin B_{12} was absorbed mainly high in the small intestine; and CITRIN et al.,[28] who instilled labelled vitamin B_{12} into the upper and lower ileum, considered that in normal circumstances this was probably true. But MCINTYRE and her colleagues [29] in 2 patients with about a foot of jejunum remaining, and MOLLIN et al.[30] in 3 patients with three to four feet of jejunum, were unable to demonstrate any absorption of vitamin B_{12}. Evidence from intestinal resection suggests that vitamin B_{12} is absorbed from the ileum, and even when only two to three feet of the terminal ileum are involved, as in regional ileitis, significant impairment of absorption may be demonstrated.[26 29]

Studies on patients with idiopathic steatorrhœa have shown that a high proportion do not absorb vitamin B_{12} [21 26 30 31] and that absorption cannot be improved by

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31. Halsted, J. A., Swendseid, M. E., Lewis, P. M., Gasster, M. *Gastroenterology*, 1956, **30**, 21.

the addition of intrinsic factor or antibiotics though it is by steroid therapy. MOLLIN et al.,[30] however, called attention to patients with steatorrhœa and with gastric atrophy of the addisonian type in whom vitamin B_{12} was absorbed in addition to the intrinsic factor. Whether this atrophy can be considered specific is questionable,[32] and it may well be encountered in some patients with idiopathic steatorrhœa. Another condition which can interfere with the normal absorption of vitamin B_{12} is that associated with intestinal diverticulosis.[33] In such patients megaloblastic anæmia is liable to develop, owing to deficiency of vitamin B_{12}; this, it has been suggested, is due to over-growth in the diverticula of intestinal bacteria which utilise the available vitamin B_{12}. The anæmia often responds to aureomycin (chlortetracycline),[30] but not to neomycin [34]; occasionally it responds to the addition of intrinsic factor.[34] MOLLIN et al.[30] found normal absorption of vitamin B_{12} in pancreatic steatorrhœa, while MCINTYRE et al.[29] found in 4 patients impaired absorption, which was not improved by intrinsic factor, antibiotics, or pancreatin; but a 5th patient, who had all her pancreas removed, absorbed vitamin B_{12} normally, so it must be concluded that deficiency of pancreatin secretions could not have been the operative factor in their previous 4 patients. Thus, while radioactive vitamin B_{12} has produced many conflicting observations, it has helped to reveal that vitamin B_{12} is absorbed by more than one mechanism.

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Annotations

ECONOMY IN PRESCRIBING

THE pharmaceutical service accounts for only some 10% of the total expenditure on the National Health Service; but its high cost has been repeatedly criticised in Parliament, partly because it is one of the few main items in the N.H.S. on which it may seem that economy can be readily effected. In 1949 the average cost of prescriptions in England was 3*s*., but by the first quarter of this year it had reached 6*s*. 1½*d*. The increase is due almost entirely to higher ingredient costs; the corresponding average dispensing fees for the two periods were 12·05*d*. and 14·68*d*. Twice economy has been sought by the imposition of a charge to patients. Both times the number of prescriptions dispensed has fallen; but on the second occasion, in December, 1956, this effect was quickly offset by the increased value of individual prescriptions, which jumped to the present figure from an average of 4*s*. 9*d*. in 1956. In June, 1957, the Minister of Health set up a committee, under the chairmanship of Sir Harry Hinchliffe, to investigate the cost of prescriptions.

In an interim report, issued last Monday,[1] this committee declares that on the whole the duty of prescribing drugs has been discharged carefully and responsibly. Nevertheless, some economy is possible without loss of efficiency. Comparable difficulties have emerged in other countries where health services are a charge on the community. In New Zealand, for instance, between 1947 and 1957 the cost of the pharmaceutical service increased by 181%, and the prescriptions per head of population increased by 65%. Drastic steps were taken; and as a general rule a practitioner may now prescribe no more than ten days' supply, and some medicaments can be prescribed only on the recommendation of a hospital authority. The Hinchliffe Committee contemplated calling for similar limitation here, but decided that there were too many administrative difficulties. It will, however, review this possibility again in its final report.

If a general practitioner does not know the true cost of his prescribing, this may be due to either of two causes—lack of training or lack of current information. As a student he may never have heard of the *National Formulary*; and the committee recommends that the alternative edition, based on a pharmacological classification, of this valuable book should be supplied to all clinical students as well as to hospital doctors. In the further enlightenment of the practising doctor, the regional medical officer, says the committee, should play a more active part by providing up-to-date information on developments in pharmacology and therapeutics. Doctors may be entirely unaware of the cost of the drugs they prescribe, as not all manufacturers provide such information, and some five thousand proprietary products are on the market. The committee suggests that the law be amended to require manufacturers to indicate the price of their products in their literature and advertisements. In addition the Ministry of Health, in conjunction with the British Medical Association and the Pharmaceutical Society, should investigate the possibility of issuing a comprehensive prescribing handbook so that practitioners may have in one volume information on medicaments and their retail price and on possible alternatives.

The statistics at present provided by the Ministry are inadequate and appear too infrequently. Information on the cost of a practitioner's prescribing reaches him some four months after the prescription has been issued. The committee maintains that this interval could be shortened if every prescription were priced individually and the present averaging system jettisoned.

The committee also proposes that the Pharmacopœia Commission should be asked to review the principles on which the selection of approved names is based, and to authorise approved names more promptly. But it is well known that new preparations are introduced and become fashionable through their trade names, which are coined immediately by staff employed for the purpose, and are skilfully designed to be easily written and remembered. Indeed nomenclature is often ahead of the product; and at least one firm has called in cybernetics to prepare many mellifluous names which have been patented in advance. The committee accepts the view, put forward by the Executive Councils' Association, that executive councils should be directed not to supply copies of their medical and pharmaceutical lists to drug houses. In practice this measure would have little effect; for these are public documents, available in post offices and libraries. The thorny question of substitution, well known in the hospital world, is not touched on; but no doubt it will be considered in the committee's final report.

1. Ministry of Health: Interim Report of the Committee on Cost of Prescribing. H.M. Stationery Office. Pp. 12. 9*d*.

NEOMYCIN IN OCULAR INFECTIONS

OCULAR infections continue to contribute substantially to visual disability and blindness, despite the virtual elimination of ophthalmia neonatorum and interstitial keratitis by improved methods of treatment. Most infections are exogenous, and many are associated with injury; bacteriological cultures would be expected in these circumstances to indicate the appropriate antibiotic or chemotherapeutic agent, but, owing to technical difficulties, culture specimens can be obtained only from the conjunctiva and eyelids, and in the more serious corneal and intraocular infections the organism can seldom be detected in this way. Accordingly the nature of the infection must still often be determined largely by clinical deduction, and the efficacy of treatment decided by therapeutic trial or prophylaxis. The value of penicillin used in these ways is evident from the greatly reduced incidence of serious ocular infections (and in particular of hypopyon ulcer) since its general use became possible; but its limitations in respect of gram-negative organisms and penicillin-resistant staphylococci are reflected in the high proportion of serious infections which are now found to be caused by these organisms. Sorsby and Ungar [1] found 19 such infections in a series of 61 inpatients at the Royal Eye Hospital, and they drew attention to the need for some more effective, broader-spectrum antibiotic for use both in such cases and in prophylaxis.

The choice of a broad-spectrum antibiotic presents special problems in ophthalmology owing to the selective action of the blood-aqueous barrier. The comparable levels in blood and aqueous for innocuous sulphonamides are 3·4 mg. per 100 ml. and 0·4 mg. per 100 ml. respectively; with penicillin penetration into the aqueous is better, and still higher levels may be achieved by subconjunctival injection of penicillin with adrenaline.[2 3]

Sorsby [1] now reports trials of several broad-spectrum antibiotics in rabbits infected with penicillin-sensitive and penicillin-resistant staphylococci and with *Pseudomonas pyocyanea* and proteus. Carbomycin was perforce excluded on account of poor local tolerance; and erythromycin, which also produced some local irritation, gave unpromising results when injected subconjunctivally or given by mouth. The effect of subconjunctival neomycin on penicillin-resistant staphylococci infections was more hopeful. (Additional oral erythromycin produced no material extra improvement.) *Ps. pyocyanea* and proteus alone among the gram-negative organisms give rise to suitable experimental ocular lesions; and, with the first of these, results comparable with those obtained with polymyxin B and with streptomycin were seen. Intraocular infections with proteus proved impossible to control with any of the antibiotics used, but in a parallel experiment with animals pre-treated with neomycin the infection was controlled in most cases, and in a further series of experiments with gram-negative bacteria the less fulminating infections produced by intracorneal injection of proteus were controlled. A final series confirmed that in infections with the common penicillin-sensitive organisms neomycin is as effective as penicillin.

Thus neomycin is no less efficacious against both gram-negative and gram-positive organisms than the other individual antibiotics. Moreover it has greater range; and, being suitable for subconjunctival injection, it may be the antibiotic of choice when the causal organism is unknown. Early clinical experience suggests that the human eye tolerates well the repeated subconjunctival injections of neomycin necessary to maintain therapeutic concentrations, and this antibiotic is clinically effective in severe ocular infections.

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3. Sorsby, A. *Trans. ophthal. Soc. U.K.* 1953, **73**, 161.

NEW LIGHT ON RENAL STONES

UNDERSTANDING of urinary stone will be achieved only by appreciating the conjunction of biochemistry and mechanics which must contribute to its formation.[1 2] Only biochemistry will explain why calcium salts remain in urinary solution in some individuals but not in others, and on what complex matrix the stone develops; while mechanics alone can provide the answer to where in the kidney the insoluble salts first appear and how they are eliminated thence. Fortunately much of the mechanical side to this problem has already been elucidated by the work of Carr,[1] who has refined his methods still further by employing microradiography in association with freeze-drying of the specimen [3] in order to substantiate his hypothesis that renal calculi are formed on calcareous particles excreted via the lymphatic system into the renal calyx. This method has great advantages over direct radiography of the fresh specimen. Fresh specimens require a waterproof layer to protect the emulsion on the film or plate; moreover, they tend to dry and shrink during exposure; it is thus difficult to obtain clarity in the ultimate picture. Freeze-drying not only overcomes these difficulties but also improves contrast, since the water which is thus removed has otherwise a similar coefficient for X rays to that of the tissue itself. Using fine-grain film exposed when almost in contact with the kidney at operation, Carr had previously shown small opacities in the renal substance and Randall's plaques at the renal papilla; also that an apparently solitary stone often proved to be a collection of smaller stones. Now, with the aid of freeze-drying and microradiography, the story has been carried a stage further; for the plaques of calcification are seen to comprise a collection of small opacities, and Randall's plaques, likewise a granular collection of calcium salts, are observed to be lying not at the renal papilla but just beside it, where the lymphatics of the renal parenchyma discharge into the calyceal fornix. Calcium does not seem, therefore, to be discharged or deposited at those parts of the renal papilla where the tubules end. Furthermore, Carr has revealed that the deposition of calcium particles within the renal parenchyma is often lineal and in close relation to the vessels. This new evidence strengthens his belief that deposits of calcium, like small particulate matter anywhere in the body, are transported in the lymphatic system; and in this the kidney is no exception. Once projected into the renal pelvis these particles form a matrix for a larger concretion.

But why do calcium salts tend to precipitate out within the kidneys of some? Boyce et al.[4] have studied 148 patients with recurrent stones and have found that, though their calcium intake may differ little from that of healthy controls, their urinary output of calcium is significantly higher. This may be controlled in part by a diet low in calcium and vitamin D, or by phytate administration, but these measures do not cause any distinct regression of existing stones or apparently avert further stone formation. In the light of Carr's work this could hardly be

1. See *Lancet*, 1955, ii, 1177.
2. *ibid.* 1956, i, 1054.
3. Carr, J. J. X-ray Microscopy and Microradiology. New York, 1957.
4. Boyce, W. H., Garvey, F. K., Goven, C. E. *J. Amer. med. Ass.* 1958, **166**, 1577.

expected, for, by the time one stone has become manifest clinically, so many small concretions may be present that reduction in calcium intake may not reverse the process of further stone formation. As Carr suggests, the only cure may then be excision of the affected lobe of the kidney. Flocks [5] has also found that hypercalcinuria is common in patients with urinary stone, and yet in 21 out of 35 cases there was no evidence of hyperparathyroidism or bone disease. Increased intestinal absorption may therefore be responsible—a fact which emphasises that this problem will not be solved by urologists, radiologists, or physicians alone.

AMYLOIDOSIS

WHILE the cause and method of deposition of amyloid in the tissues remain unknown, the vagaries of incidence are becoming clearer. In contrast to those cases in which the amyloid disease is secondary to some known predisposing cause—such as chronic sepsis, syphilis, tuberculosis, tumours, and the more recently recognised myelomatosis, rheumatoid arthritis, and regional enteritis—there are cases of " primary amyloidosis " in which no recognised cause can be found, some of these falling into definite syndromes according to the organs mainly or primarily involved. Amyloid disease affecting the central nervous system sometimes escapes diagnosis. [6] Chambers et al.[7] report three neurological cases in which men in the early thirties developed a form of polyneuritis or symptoms mimicking tabes. In the nerves there was obvious enlargement, and biopsy revealed amyloid, which was also sometimes found post mortem under the arachnoid, in the spinal dura mater, and throughout the posterior-root ganglia. Chambers et al. found reports of a familial form of primary amyloidosis affecting mainly the nervous system.

The heart is commonly affected in primary amyloidosis, especially in older patients; the symptoms and signs are those of progressive myocardial failure, and, when no other cause can be found, amyloid disease should certainly be suspected. The amyloid may be deposited extensively under the endocardium alone or also under the pericardium, or it may infiltrate the myocardium; in some cases reported by Symmers [8] the muscle-fibres were actually transformed into amyloid substance. The tongue is also sometimes involved in primary amyloidosis, causing macroglossia which may lead to difficulty in speaking, eating, and protrusion. As in the heart, the amyloid may be interstitial, extending out even to the gums (biopsy of which may give the diagnosis), or it may involve the muscle-fibres themselves. The skin may be involved in various ways. One of the patients in the series reported by Chambers et al. initially consulted a dermatologist on account of trophic lesions resulting from the polyneuritis; hæmorrhagic lesions or generalised pigmentation may develop; or there may be nodular or widespread thickening due to amyloid deposition, as in an otherwise healthy young woman with involvement of the areolæ and vulva.[8] The kidneys are commonly involved in secondary amyloidosis; and in the primary form hæmaturia, the nephrotic state, or even uræmia may be the only or first sign. The alimentary tract is also liable to be involved in primary amyloid disease, as also in the secondary form.

There was a tendency [9] to regard primary amyloidosis as a separate entity from the secondary type. Besides the different distribution and the lack of a recognised predisposing cause, the primary form seemed to be characterised by different staining reactions of the amyloid deposits, and in some cases a foreign-body reaction developed around or calcium was deposited in the amyloid. In a comprehensive review Symmers [10] showed that the sites involved in primary cases may also be involved in secondary, though the incidence may be very different; all the other features can occur in either form of the disease, and accordingly all varieties are related to one fundamental disturbance. He suggests that amyloid is an insoluble glycoprotein laid down in the connective-tissue ground-substance as the result of a local antigen-antibody reaction. Cameron [11] admits that where it comes from and how it is produced are baffling problems. Both these investigators point out that amyloid is closely related to hyaline degeneration, and in biopsy some specific stain (methyl-violet, Congo-red, iodine) must be positive before the diagnosis of amyloid disease is established.

STRESS FRACTURES

STRESS fractures of leg bones are often overlooked; for not uncommonly they are detectable only with special radiographic projections. In the 1939–45 war, fatigue fractures of the tibia were described by Hartley [12] in children and young adults and by Leveton [13] in Army recruits. In the young patient these fractures affect the upper tibia, and often spread from a small crack across the bone to produce a complete fracture. In the middle-aged and elderly, fatigue fractures tend to involve the lower end of the tibia.[14] Most of these patients do not give a history of unusual muscular activity, and the fractures unite fairly rapidly.

In two groups of patients stress fracture seems to be an occupational hazard. Burrows [15] has described a minute infraction of the tibial cortex in male ballet dancers. The lesion tends to affect the middle of the bone, and gives rise to pain, swelling, and tenderness over the crest of the tibia. Many different radiographs may be necessary to reveal the crack, and in two of these patients there was sufficient doubt about the diagnosis for the lesion to be explored; the specimens removed at operation showed very little evidence of bone repair. A similar lesion, slightly lower in the tibia, has been described by Devas,[16] who thinks that this explains the painful condition of the leg found in athletes in training and often known as " shin splints ". These patients present with pain, usually at the start of training and subsiding with rest. The pain often gets more severe as training becomes more arduous; and radiographs, which may have to be repeated several times before any abnormality is detected, will show merely a small crack running through the cortex.

Stress fractures in the tibia are probably a direct result of muscle pull. Treatment of these minute cracks is often difficult. Immobilisation is necessary only so far as it contributes to the patient's comfort. In time symptoms usually subside, but the disability from this lesion is more protracted than after a complete fracture of the bone.

5. Flocks, R. H. *ibid.* 1939, **113**, 1466.
6. Cappell, D. F. Muir's Textbook of Pathology; 6th ed., p. 150. London, 1951.
7. Chambers, R. A., Medd, W. E., Spencer, H. *Quart. J. Med.* 1958, **27**, 207.
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The Wider World

CHILD HEALTH AND DISEASE IN JAMAICA
SOME IMPRESSIONS

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WITH the large influx of West Indians into the cities of Britain in the past few years it has become obvious that the West Indies are very different from the tropical paradise of popular imagination. Doctors, in particular those who have West Indians as patients, may be interested in a brief account of their socio-economic and medical background. This is the outcome of six months spent at the University College of the West Indies, Jamaica, in 1957, as a visiting lecturer in pædiatrics and therefore has a pædiatric orientation.

Jamaica is an island of great beauty and many problems. The population is a million and a half and is increasing rapidly. Most of the inhabitants are poor uneducated peasants engaged in agriculture. The difficulties of this occupation are often great in an island where high mountains cover three-quarters of the land and plots are small and therefore uneconomical. Industry is not yet a major factor in the island's economy, but the mining of bauxite is a hopeful start.

Most of the inhabitants are of African origin. The 1943 Census gave:

Predominantly African	78·1%
Other Afro-Caucasian or Afro-Asiatic mixtures ..	17·5%
Caucasian	1·1%
East Indian	2·1%
Chinese	1·0%

The dominance of the African ancestry is reflected in the Jamaican character. Jamaicans, like Africans, are happy, volatile, unwilling to take life too seriously, and always ready to laugh loudly at its problems. This carefree attitude is sometimes aggravating to Europeans but on the whole arouses admiration when it is set against the grim background of many of their lives. Another admirable trait which must forcibly strike any doctor called on to examine a Jamaican patient is his or her personal cleanliness. Not only in Britain but also in their own country, often under appalling conditions, Jamaicans keep themselves, their children, and their clothes clean and neat at all times.

Family Life

Slavery was only abolished in Jamaica in 1838, and its legacy still has great influence on the peasant's life today. To the pædiatrician a very striking difference between child life there and in Europe is seen in the concept of the family and particularly of the place of the father in the family. The Jamaican peasant family is matriarchal and consists of a mother, often a grandmother, and several children, who may or may not have the same father. More often than not there is no man in the household. The illegitimacy-rate is 70%, the highest in the world. This in itself would not be serious if the parents had a stable union, but this is not often the case. Many men have little sense of responsibility for the children they have fathered, and for various reasons maintenance orders are difficult to enforce. A child's idea of a father is therefore either a man who does not live at home but who may visit occasionally or a man who is resident but who is liable at any time to be replaced by another.

Yet even a superficial study of Jamaican history prevents one from being censorious. The first English settlers were young, tough, and adventurous, but tended to be "the black sheep of white families". They were not accompanied by white women and took mistresses from the imported African slaves, whom they did not, of course, marry. Marriage between slaves was forbidden because proprietary rights over slaves were exclusive to their owners, but reproduction was encouraged to swell the labour force. This social pattern became firmly established over the next two hundred years.

The children of slaves were cared for by more or less benevolent plantation owners, who themselves had unofficial as well as official families, and the children presented no economic problem to their mothers. However, just over a century ago emancipation suddenly transferred the care of children to their mothers, who have had to bear a large share of responsibility for their upbringing since then. The feckless attitude of many fathers today stems from the attitude of their forefathers. Fortunately the idea of the father as a responsible head of the family is being accepted more widely, especially in the rising middle class.

Malnutrition

The clinical syndromes of marasmus, kwashiorkor, and marasmic kwashiorkor are commonplace in Jamaica and form the background to many other diseases of childhood. The social scene has, of course, great relevance to these disorders. It is the mother who perforce feeds and rears the children and inevitably, no matter how hard she tries, she sometimes fails. She often goes out to work soon after the baby's birth and, because of this early loss of the protective action of breast-feeding, kwashiorkor develops at a younger age in Jamaica than in Africa, where children may be breast-fed into the second or third year. Many mothers work as "higglers" (pedlars), and their earnings are often very erratic. A grandmother is a godsend, for she can look after the children by day, or they can reside with her for long periods. Otherwise the mother has to pay a neighbour or a professional baby-minder out of her meagre earnings, and obviously in such a commercial contract the children will fare less well than if a grandmother is available.

A boy, aged 9 months, was admitted to University College Hospital, Jamaica, with a vague history of "belly running" (diarrhœa). Except that his hair showed no depigmentation, the clinical picture was typical of kwashiorkor. He was miserable and underweight (14 lb. 10 oz.) and lost a further pound during treatment as his œdema cleared. Dependent œdema was gross in his forearms, hands, legs, feet, and abdominal wall, and his face showed the characteristic "sugar-baby" jowls. Flaky-paint dermatosis affected his limbs, areas of epidermis could be stripped by slight lateral pressure, and there were moist fissuring and depigmentation behind his ears, at the angles of his mouth, and in his perineum. His liver was enlarged and firm. His mucosæ were pale.

Laboratory investigation showed a moderate anæmia, a low level of plasma-proteins, and abnormal liver-function tests. A liver-biopsy specimen floated in water, and analysis gave a high fat-content.

Dietary and social history.—He was breast-fed completely for four months. His mother then went out to work as a "higgler", and for the next two months he received only morning and evening breast feeds, after which time breast-feeding was discontinued. He was looked after by a neighbour during the daytime in company with his two siblings and several children of other working mothers. The baby-minder was paid half a crown a week for his care, and his food was

provided by his mother. His father was not resident and contributed only sporadically to his upkeep. His mother's weekly earnings varied between thirty shillings and nothing. His diet consisted of 3 tablespoonfuls dried milk to 24 oz. of water daily (i.e., half-strength), some patent barley, cornmeal porridge (maize boiled in water and strained, often only the filtrate is given), and bush teas. The latter are infusions of various wild plants and are widely used in Jamaica as constituents of a weaning diet, medicinally, or even for magical purposes. Their possible toxicity is discussed below. They have a negligible calorie and protein content.

This history is fairly typical. Sweetened condensed milk is also widely used, and quite often expensive proprietary milk beverages are given. Poverty and ignorance are clearly the main factors which operate to produce such faulty feeding, but uninhibited advertising of these beverages in Press, shops, and on the radio is partly to blame by diverting money away from foods of higher protein value. Meat and eggs are not given early in life, partly because of cost, but also because of a tradition that they are unsuitable at this period of life. Hens may be kept, but the eggs are usually sold in the market.

Severe anæmia often accompanies kwashiorkor and in many cases is unresponsive to the administration of oral iron and the correction of protein deficiency. Folic acid by mouth produces a response in this group. It is usually possible to diagnose folic-acid deficiency from a bone-marrow smear, whereas examination of peripheral blood is unhelpful (Back et al. 1957). Peas in the West Indies have a high folic-acid content and, though they are a staple food for older children and adults, are considered unsuitable for infants and young children. This difference in feeding habits in the two age-groups may explain why folic-acid deficiency is fairly common in the young child but unknown in the adult, who also often exists on a generally substandard diet.

Treatment of kwashiorkor is easy in theory but often difficult in practice. In bald summary it consists in the administration of dried skimmed milk in gradually increasing strengths until the patient can tolerate solid food, but this statement conceals a wealth of nursing ingenuity and patience, factors which are most important. In spite of this, all too often a severely ill child dies for reasons which are at present ill understood. Problems of kwashiorkor are under active investigation in Jamaica by Dr. J. C. Waterlow and his team at the M.R.C. Tropical Metabolism Research Unit.

Malnutrition, a world-wide disease, is today rarely seen by the pædiatrician trained in Britain, and for this reason alone I felt my stay in Jamaica was worth while. Two other conditions were equally striking, although they are of little relevance outside the West Indies.

Veno-occlusive Disease of the Liver

This disease is fairly common in Jamaica and apparently very rare outside the island. Its pathology, clinical features, and natural history have been described fully (Jelliffe et al. 1954, Bras and Hill 1956, Stuart and Bras 1957). Its ætiology is less certain, but several suggestive observations and experiments on animals point to poisoning with bush teas (Bras et al. 1957). The clinical picture is striking.

A girl, aged 2½ years, was well until six days before admission to University College Hospital, when she became unwell and seemed hot. The next day she vomited, and this symptom continued intermittently until admission. She developed a " swell belly " and swollen feet on the day before admission. She had had an average Jamaican diet, including three types of " bush teas ".

On examination she was small and moderately well nourished. Weight 22 lb. 15 oz. She had gross ascites, and her liver was enlarged (3 inches below the costal margin in the right midclavicular line) and very firm. Her spleen was impalpable. A week after admission she developed a moderate right pleural effusion.

Laboratory investigations.—Liver-function tests were relatively normal, but liver-biopsy material showed the typical histological appearance of acute veno-occlusive disease (Bras and Hill 1956). Subintimal swelling of the small hepatic veins and atrophy of surrounding parenchymal cells were present. Portal triads were normal.

Progress.—The pleural effusion and the ascites both resolved during the fourth hospital week, and the patient was discharged well shortly after this.

It seems likely that one or more bush teas are responsible for the occlusion of the hepatic venous tree which causes the acute hepatomegaly and ascites seen in the acute stage. The disease can have more serious consequences than this case-report suggests. Stuart and Bras (1957) found that 19% of patients with acute veno-occlusive disease died of hepatic failure early in the disease, and only 48% eventually made a complete recovery. Treatment at present is only symptomatic so that prophylaxis is of great importance.

Unfortunately the weaning of Jamaicans from bush teas will be a very difficult task because they are very widely used indeed. In fact, their omnipresence in the diet constitutes one difficulty in accepting them as the sole cause of the disease, which is certainly not so common as one would expect on this theory. The difficulty is similar to that of accepting mercury as the sole cause of pink disease, or an excess of vitamin D as the sole cause of idiopathic hypercalcæmia. Until recently many babies in Britain were exposed to these substances, but relatively few were affected. However, if it is finally proved that Crotalaria, Senecio, or other plants are directly responsible for the condition as is suggested (Bras et al. 1957), intensive propaganda will obviously be justified. Many peasants use native plants indiscriminately, and children collect plants and concoct their own brews. It will probably therefore not be practicable to suggest that only certain bush teas be avoided, and propaganda will have to be directed towards the habit itself, a formidable task.

Vomiting Sickness

This is less common and less well-defined (*West Indian Medical Journal* 1953). Often occurring as an explosive illness in several members of the family at the same time, it is probably due to an ingested toxin, possibly the immature ackee fruit. The ackee, like bush tea, is a very common article of diet, and the same difficulties in prophylaxis as with veno-occlusive disease will arise if it is proved that the immature ackee is responsible. The patient may be admitted in coma after repeated vomiting lasting several hours, or, particularly in young children, coma and convulsions may develop without preceding vomiting. The hepatic glycogen is scanty (Patrick et al. 1955) and the blood-sugar level very low (Stuart et al. 1955). Some patients make a dramatic response to intravenous glucose, but the disease can be rapidly fatal.

Sickle-cell Anæmia

In a predominantly African population this disease might be expected to be relatively common, and in fact

it requires consideration in the differential diagnosis of several symptom-complexes in childhood. The sickle-cell trait is found in 5% of Jamaican children (Jelliffe et al. 1954), and tests for sickling are therefore routine in hospital practice. If the tests are positive, hæmoglobin electrophoresis is necessary to decide whether this finding is relevant to the symptoms and signs. The usual features in the first two years of life are severe anæmia, fever, mild jaundice, splenomegaly, and the characteristic painful swellings of the interphalangeal joints of the fingers. This description agrees with that of pure sickle-cell anæmia in Uganda (Trowell et al. 1957) and has the same serious implications. Clinical diagnosis is less difficult in Jamaica, however, because malaria is now uncommon. Sickle-cell anæmia and other hæmoglobinopathies are also seen in older patients, and a local map of these disorders will soon emerge when the results of investigations in the hæmatology and biochemistry departments of the University College Hospital are available. Unfortunately there is at present no proved effective treatment apart from blood-transfusion.

Infectious Disease

Apart from the disorders described above, the pattern of disease is similar to that which existed in Britain fifty years ago, with infectious diseases taking a relatively important role.

Diphtheria is fairly common, and tracheotomy is often urgent, but, after the acute phase, recovery is usually uneventful.

Typhoid fever is also fairly common, and clinical diagnosis can be difficult. Rose spots are rarely seen, and splenomegaly and the so-called characteristic temperature chart are more the exception than the rule. Moreover laboratory investigations are also unhelpful at times, for treatment with chloramphenicol may prevent a rising agglutinin titre.

Tetanus is common, for few children in the peasant class wear shoes, and goats and donkeys are common and must be largely responsible for contamination of the soil and tracks where children walk and play. Except in the neonatal form, therefore, infection usually occurs on the feet. The results of treatment are not so satisfactory as one would wish, nor is it certain that orthodox methods give the best results. In one hospital it was felt that the administration of repeated daily doses of antitoxin after the initial dose of 200,000 I.U. was important, and in others the patient was nursed in the main ward without sedation, for it was felt that spasms, although painful, were less dangerous than sedation. Facilities for treatment by intermittent positive-pressure respiration after curarisation do not yet exist. The various problems of treatment are under active consideration at present, and dogmatism on therapy is at present unjustified.

Infantile gastroenteritis is as common as one might expect in a country with overcrowding and low sanitary standards and is more often due to Salmonellæ than in this country (*West Indian Medical Journal* 1954). Combined with malnutrition it can present a formidable problem; yet many patients recover surprisingly quickly without relapses, once initial dehydration has been overcome. Persistent vomiting is common in gastroenteritis and in malnutrition. Gastric lavage usually produces a large amount of mucus. It is tempting and all too easy to blame this chronic gastritis and indeed many other infant maladies on such a dietetically abhorrent procedure as the administration of bush teas, but proof is lacking. Vomiting does not appear to be a symptom of underfeeding in infancy as it is in this country. It is common to find pure water lack in a dehydrated baby with gastroenteritis, and the practice, common in Britain, of giving an initial intravenous injection of physiological saline solution before starting the drip is contraindicated, since hyperelectrolytæmia is often present. The amount of intravenous fluid required for maintenance is large—3 oz. per lb. of body-weight daily—and the risk of overhydration by an intravenous drip is much less than in this country. Cross-infection in hospital, the main worry to the staff of a gastroenteritis unit in Britain, is uncommon in Jamaica. This is fortunate, for in many hospitals segregation is impossible and gross overcrowding is the rule. Cases of gastroenteritis, typhoid, and diphtheria are nursed alongside cases of kwashiorkor, sickle-cell anæmia, pneumonia, meningitis, tuberculosis in all its childhood forms, and other more familiar diseases. The average age of the ward population is usually low (18 months or less); hence the freedom from cross-infection in gastroenteritis is not due to dilution of babies with older children. Open windows and jalousies are necessary for comfort, and, I feel sure, are important in this respect as those working with infectious diseases in this country have insisted for years.

Overt *syphilis* occurs frequently both in adults and children. In adults cardiovascular syphilis is common, and it is quite justifiable to expect a West Indian student at his final examination to be familiar with the physical signs of aortic aneurysm, although this would not apply in Britain today. Congenital syphilis is seen in most of its forms.

Other Diseases

Acute rheumatism is surprisingly common, and there is a high incidence of vicious carditis (Back and De Pass 1957). Streptococcal infection and acute nephritis do not seem to be correspondingly common, and rheumatic nodules and chorea are rare. One wonders whether subnutrition is in some way responsible for this emphasis on cardiac damage.

In the educated middle class one meets the complaints associated with a higher standard of living, such as *enuresis*, *behaviour disorders*, and *obesity*. The healthy child whose parents are convinced that he does not eat enough may well present in the outpatient clinic alongside the child with gross kwashiorkor. *Behaviour disorders* in the peasant class are rarely seen at hospital, probably because they are not regarded as conditions requiring orthodox medical help. Obeah men, the Jamaican equivalent of witch doctors, are still influential in the bush, and it is reliably reported that in some areas their permission is required before orthodox medical advice is sought.

Some diseases, such as *vitamin deficiencies*, are surprisingly rare. *Scurvy* probably has a similar incidence in Jamaica to that in Britain. Simple *rickets* is almost unknown in spite of the grossly inadequate diets, which must be deficient in vitamin D. In general, rickets is not rare in the tropics (Jelliffe 1955) and is usually due to traditions, such as swaddling and nursing in purdah, which lead to inadequate exposure to sunlight. There are no such traditions in Jamaica. The classical signs of deficiences of the vitamin-B group are uncommon,

although such diseases might be expected in view of the central place of degerminated maize in the diet.

Infantile pyloric stenosis is very rare, so much so that the occurrence of a case is an event in hospital practice.

Neonatal Disorders

Infant mortality is high (78 per 1000 in 1951), and a large proportion of deaths is due to infection. Other causes of death, operative mainly in the neonatal period, are much less important; in hospital at least, the neonatal period seems relatively safe. For instance, labour is easy; during my stay I saw no baby with signs of cerebral birth injury in the obstetric department of the hospital.

Prematurity, defined by birthweight, is common, but for a given weight a Jamaican premature baby is much more mature in behaviour than his European and North American counterparts. Problems of temperature regulation, initiation and maintenance of respiration, and feeding are much less obtrusive than in Britain. A 3-lb. baby, for instance, will often take well from the breast and cause little anxiety to the nurses. Relative behavioural maturity has recently been demonstrated in newborn babies in Uganda (Geber and Dean 1957).

Hæmolytic disease of the newborn is relatively uncommon, for the proportion of the population which is rhesus-negative is about half that in Britain.

To the pædiatrician, then, neonatal work has less clinical interest than it has in this country.

Feeding difficulties in the early months are also few. Breast-feeding is widespread, on demand, and there is no false modesty about it among most mothers. In such a poor country the natural method is often the only adequate method, and it is fortunate that breast-feeding is so easy for nearly all women. It is sad to see the influence of advertisements for dried milk on such people. The idea that breast-milk is inferior to these products is easily induced, and dried milk may be deliberately substituted for breast-milk by a mother because she understands it to be superior, although she will probably dilute it to make it last longer.

Preventive Pædiatrics

It will be clear that Jamaica is no Welfare State. Government medical services are mainly curative and, although the Hyacinth Lightbourne Nursing Service combines preventive and curative work in an admirable way, there is a great need for health visitors and infant-welfare clinics. Diphtheria, whooping-cough, and tetanus are far too common, and there is a danger that they will continue to be accepted as inevitable because they have no news value today. Poliomyelitis, by contrast, has been in the limelight recently, and in 1957 a widespread official inoculation campaign against it was undertaken in Jamaica, although in terms of mortality it has so far been no more important than the other diseases.

The main problem of preventive pædiatrics in Jamaica, of course, is malnutrition. The issues here are mainly economic, and its discussion is beyond the scope of this article. At present UNICEF provide free skimmed dried milk to this and other countries who need it, and it is available to mothers in certain areas at a price equivalent to the cost of distribution. There is a danger, however, that this very laudable arrangement will officially be taken for granted and no provisions made if the supply ceases. In spite of poverty, education and encouragement can achieve much in the prevention of malnutrition. It was surprising how often patients, admitted to hospital with kwashiorkor, continued to thrive after discharge from hospital although the economic circumstances were unchanged. A comprehensive health-visitor service could go some of the way in preventing malnutrition.

I wish to thank all those, too numerous to mention, who made my stay in Jamaica so enjoyable and educative. It is to a large extent the observations and opinions of the doctors, nurses, and students of the University College Hospital and the Kingston Public Hospital which are embodied in this article. Any errors must be ascribed to myself, the visitor, whose only advantage was possession of the opportunity to see diseases and situations with a fresh eye. Finally, I wish to thank Prof. J. M. Smellie, the University of Birmingham, and the British Council for making the visit possible. I hope that such visits to tropical countries will become more general, for it is difficult to exaggerate their value.

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Public Health

NOTES ON SMALLPOX VACCINATION

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THE work on which these notes are based was undertaken, in the first instance, to demonstrate to students the technique of multiple-pressure vaccination.

The Site

There are certain disadvantages in the accepted methods of administering the vaccine, the chief of which is the site favoured—the deltoid region. This is an inconvenient area. Except in the case of babies, coats have to be removed and shirt and other sleeves have to be rolled up and held in position over the shoulder; and these garments have to be replaced without disturbing the lymph. All this has to be done again later for medical inspection and for any local treatment that may be needed.

There is no valid objection to vaccination on the anterior surface of the forearm, where a Schick test is done. The vaccine can be inserted much more easily with the operator sitting opposite the seated patient, and greater control can be exercised in stretching the skin and making the required pressures, and after control is also much easier. An additional advantage in females is the cosmetic effect: any scarring in this area is minimal and is practically never seen in ordinary circumstances.

Expulsion of Lymph

It is sometimes difficult to expel the lymph from the capillary tube in which it is supplied. An ingenious method of overcoming this difficulty was described by Galpine (1951). One of the broken ends of the tube is inserted into the bulbous end of an ordinary rubber teat;

into the open end of the teat a glass tube, lightly plugged with sterilised cotton-wool, is inserted, and the lymph may then be expelled by gently blowing through the glass tube.

This was found to work very well in practice, affording a great deal of control, but occasionally it was impossible to avoid expressing an excessive amount of lymph. This difficulty was overcome by what appears to be an even simpler procedure. The capillary tube is broken in the usual way with due asepsis; it is then held vertically between the thumb and the first finger, while the hypothenar aspect of the hand is tapped against a hard surface—e.g., a table. This brings the lymph down to the open lower end of the tube. The tube is then very gently tapped against the surface of the prepared skin and, by capillarity, a small amount of the lymph comes out.

This method allows a very great deal of control of the quantity of lymph used and may prove very economical when large numbers of people have to be vaccinated. Vaccinating a class of medical students I set out to ascertain how many could be vaccinated with a single tube. I had got as far as vaccinating nineteen when a tiny speck of blood was observed contaminating the lymph. The risk of transmitting viral hepatitis caused me to reject the remainder of the lymph, but I think there would have been no difficulty in bringing the number of vaccinations with that tube up to twenty-five.

Multiple-pressure Vaccination

In describing the multiple-pressure methods all the textbooks teach that the drop of lymph should be placed on the skin first, and the pressures of the needle made through it; but I experienced some difficulty in practising this method without drawing blood at the same time.

The viscosity of the lymph seems to protect the skin and thus calls for undue pressure of the needle, which therefore occasionally goes deeper into the skin than it should. To overcome this difficulty the following method was devised in which the necessary pressures are made before the lymph is applied:

(1) The skin of the anterior surface of the forearm is prepared in the usual way, acetone being used for surface disinfection.

(2) The operator next takes the capillary tube and breaks off each end in turn, using two sterilised pairs of forceps guarded with sterilised rubber tubing. The lymph is brought to one end in the manner described above, and the tube may then be handed to an assistant or laid aside for the moment.

(3) The operator then grasps the posterior aspect of the patient's forearm with his left hand and puts the skin on the stretch. Next he taps the tightened skin very gently with a no. 1 straight Hagedorn needle. Soon the altered appearance of the skin indicates that the necessary breach in continuity has been made: the opaque silvery appearance is quite distinctive.

(4) For the needle is substituted the capillary tube with the lymph shaken well down. The tube is tapped, again very gently, on the abraded surface, which is soon covered by a film of lymph whose thickness depends entirely on the number of taps. At this juncture the platinum spatula of an old vaccination scarifier is used for pressing the lymph gently into the underlying cells of the cutis vera.

(5) The lymph is allowed to dry before the patient's sleeve is pulled down, and the operation may then be regarded as complete. Some operators prefer to apply a dressing; in this case the only precaution needed is to make sure that an antiseptic one is not used.

It is, of course, assumed that strict asepsis is observed throughout the procedure.

This method has been used in 255 adults, of whom 89 were medical students, and 244 of the vaccinated persons were followed up. The after-effects differed in no appreciable way from those observed in the case of ordinary vaccination in the deltoid area. The ease of examination was an outstanding advantage, as was the ease of applying either stupes or penicillin cream in the few cases of primary vaccination in which the local reaction called for treatment. A further advantage was the facility with which the various stages of the lesion could be studied; this was much appreciated by the students.

Vaccinia

The result of inoculating cowpox into man depends almost entirely on the patient's previous vaccination history. A person who has been vaccinated more than once previously nearly always develops an immune reaction (papule formation alone without any general reaction). An adult who was vaccinated only once in infancy may develop a typical primary vaccinia or an accelerated reaction, but usually little or no general reaction or only a fleeting one. In an adult who has never been vaccinated the picture is quite different; the cooperation of medical students in this inquiry has offered an opportunity of studying it closely.

The conclusion that I am forced to is that vaccination should not be regarded lightly in such cases, and most certainly not the reaction which almost invariably develops after it. The peak effect, however, does not endure more than two or three days at the worst, and the patient should be warned that this will be experienced about the tenth or eleventh day, and that, no matter how bad he may feel, he will eventually recover.

The notes made for me by my students indicate that there is a primary viræmia, which may occur between the fourth and seventh days, but that the brunt of the attack (corresponding no doubt to a secondary viræmia) falls between the tenth and the twelfth days. Usually the reaction is severe, being ushered in by malaise, shivering, nausea, and prostration. Pyrexia is an invariable accompaniment; in 1 case it was 103°F, but it is usually about 101°F. At this stage lymphangitis is prominent, lasting during the pyrexia and subsiding with it; forearm vaccination afforded a very good opportunity of observing this. Myalgia and headache also were prominent. In addition to the zone of hyperæmia immediately adjoining the nodal point, widespread erythema may affect the limb; in 1 case (the only one to cause apprehension) there was, in addition to the erythema, a bullous eruption involving the forearm and the upper arm. Pyrexia in this case was high—100°–103°F for four days—after which the condition subsided, and recovery was uneventful. Axillary adenitis was observed in practically all the cases. Apart from the last-mentioned patient (who was confined to bed for a week) the longest period of rest in bed was three days.

Of the 89 students the vaccination was primary in 20, of whom 16 presented the severe type of reaction. In none of the remaining 69 students was the reaction such as to require treatment in bed or to interfere with their ordinary activities except, perhaps, sport for a few days.

Much the same can be said of 166 other persons vaccinated. Most of these came for vaccination because they were proceeding abroad. In addition I saw a very much larger number who had been vaccinated by their

family doctors and had to present themselves to me, as city medical officer, for authentication of their vaccination certificates.

It seems inevitable that there will be a further dispersion of people to countries where smallpox is a risk or in which the health authorities require vaccination as a prerequisite for entry. In view of the unpleasant reactions inseparable from primary vaccination in adults it must be regarded as a great folly to postpone this procedure in infancy.

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Special Articles

AUSTRALIAN SCHOOL OF MEDICAL RESEARCH

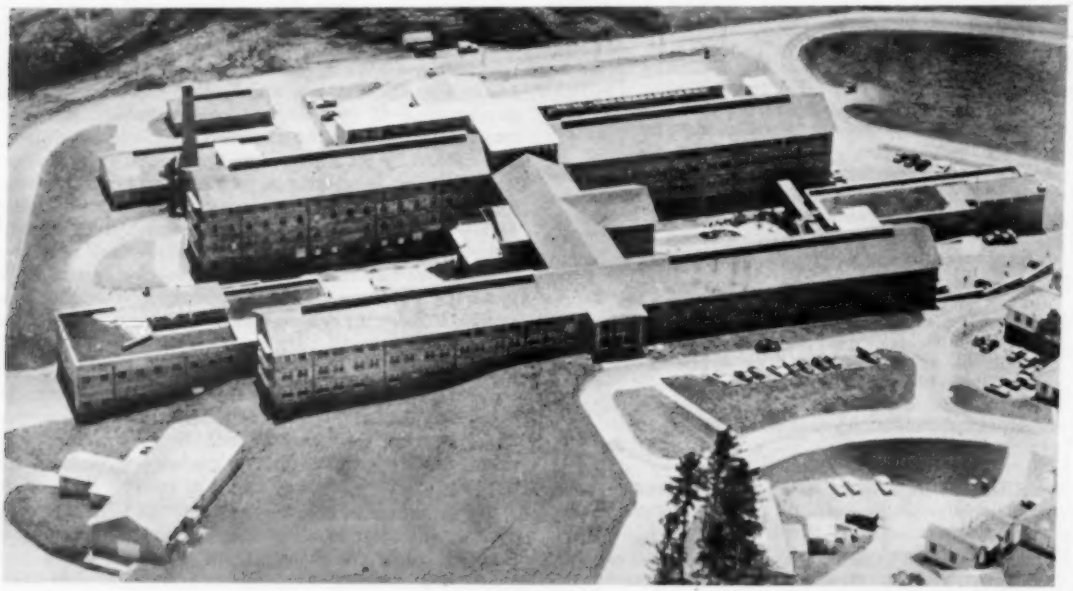
IN 1946 the National University of Australia was founded as a national centre for research and research training. It was Australia's constructive response to the complaints that many able scientists left the country to study and work at universities and institutions in Great Britain. This depletion was most sharply felt in the medical sciences, for at that time the only Australian medical research institute with an international reputation was the comparatively small Walter and Eliza Hall Institute in Melbourne. As long ago as 1944 Sir Howard Florey, himself an Australian graduate, had suggested in a report to the Commonwealth Government that a national institute for advanced medical sciences should be set up. This project was accordingly included in the early plans of the new university, and until 1955 Sir Howard Florey was adviser to the council of the university in the establishment of the John Curtin School of Medical Research. Last March, at Canberra, in the presence of the Australian Prime Minister, Sir Howard formally opened the buildings which are to be the school's permanent home.

From its earliest days the school has thus had his support and counsel, and at its inception it followed his wise suggestion not to let men wait on bricks and mortar and in 1948 appointed professors to establish the first departments though there were then no laboratories in Canberra. The departments were started in laboratory space lent by several institutions: biochemistry at the Commonwealth Serum Laboratories in Melbourne; medical chemistry at the Wellcome Research Institution in London; microbiology at the Walter and Eliza Hall Institute in Melbourne; experimental pathology in Sir Howard's laboratories in Oxford; and physiology in the University of Otago in New Zealand. In 1951 temporary laboratories were built in Canberra, and these were occupied between 1952 and 1957, when the departments moved to the present building.

The school stands in $6\frac{1}{2}$ acres of ground within the university site, looking towards the Brindabella range. It is a brick building about 170,000 square feet in floor area. It is built in an H-shape, with four wings for laboratories (which are mainly on the upper two floors) and a central spine housing lecture theatre, seminar rooms, offices, tearooms, and library. The lower floors house many of the service departments: store, photography, media kitchens, mechanical plant, and so on. There are also two animal houses, each of some 7000 square feet floor area, one for non-infected and the other for infected animals; an animal breeding establishment some four miles away; and a large light-engineering workshop.

The laboratory wings have on the south side laboratories 20 ft. deep and on the north side service rooms (hot rooms, cold rooms, &c.) and studies 14 ft. deep. The laboratory layout on each floor is adapted to the needs of the particular department, but within the departments it follows a standard plan.

At present there are five departments. Prof. A. H. Ennor is head of the department of biochemistry, and also dean of the school. Dr. F. C. Courtice has just been appointed to the chair of experimental pathology. Prof. Adrien Albert is director of the department of medical chemistry, Prof. F. J. Fenner of the department of microbiology, and Sir John Eccles of the department of physiology. At present the total research staff is about 40 and there are some 20 PH.D. students, but the school is still growing. Several new departments will be started over the next few years to fill gaps in the present structure, and each department will be developed.



In England Now

A Running Commentary by Peripatetic Correspondents

On Tuesday, at Westminster, the Royal Army Medical Corps celebrated its diamond jubilee with all the national splendour of an Abbey service. After the entry of Queen Elizabeth the Queen Mother, colonel-in-chief of the Corps, a fanfare echoed exquisitely in the roof, the National Anthem was sung, and the Dean bade us join in " an act of thanksgiving, remembrance, and dedication ". But amid so much that was beautiful, nothing was more appropriate than the breath-taking sight of the great nave filled with men in battledress—recalling so directly the medical services in action and the armies they have served. As the Chaplain-General said in his sermon, the R.A.M.C. has no battle honours of its own, but has a share in the battle honours of every regiment.

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After seeing her off on the last bus, I went to collect my cycle from the cycle-park. There were still many cycles there and it took me a little time to find it. I reached out to pull it down from its rack, but there was an unfamiliar resistance—the back wheel was padlocked. At first I had grave doubts as to whether the cycle was really mine. I walked the length of the park looking searchingly at each cycle, then back again—no, it was mine. I gazed at the cycle forlornly and at the strange chain that bound it. How had it got there? How should I get it off?—it was a stout chain and stouter lock.

I gave it a smart tap with my shoe which I took off for this purpose. I looked guiltily around and replaced my shoe. Nobody would believe it was my cycle. I tried all the keys in my pocket although I knew they would not fit. Perhaps the law had put it on—the cycle wasn't really fit to be on the road. If I ever freed it I vowed I would have new brake-blocks and tighten up the front wheel. Feeling increasingly guilty I took a safety pin from my lapel and fiddled with the lock; hastily changing tactics and pretending to be adjusting my cycle-clips as other callous riders easily gathered their cycles and rode off.

It was dark and cold. I was far from home. I couldn't possibly trundle it back holding up the back wheel the whole time. In despair I approached the next person who showed signs of retrieving a cycle. I explained my plight. It did not sound very true. I felt very guilty. I wondered if he would report me. A night in a prison cell seemed possible. He did not say anything; took the proffered pin; inserted it in the lock; and in a trice the cycle was freed. I thanked him profusely; took down my cycle feeling as if I had stolen the Crown Jewels; and rode off. The strange chain was in my pocket—I would have to get rid of it at the earliest moment.

I laughed to myself. I wondered what the owner of the chain would think when he found his cycle safe but unshackled. I let myself in through my back door and opened the cycle shed—inside was my cycle. I remembered then. I had of course set out by bus.

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My life-work is nearly at an end: I have all but completed my great Contribution to scientific thought and achievement. Only one thing is exercising me—*the title*. I wrote the title in my mind at least 17 different ways before the first word of the thesis ever hit paper, but indecision, like choreopsis, set in and I am as far from fixing it as ever. Must hurry up or someone else will publish first. The obvious thing is a clear straightforward descriptive honest sort of title that tells at a glance just what it is all about, like " A Textbook of Endolymphology ", except that it isn't that, or " Modern Trends in Cervical Prostheses ", but it isn't that either. Applying this to mine would make it something like " Some Aspects of the Dihydrophyllobothrium Reaction in Anxiety-hysteria related to Lesions of the Caudate Nucleus in Ovariectomised Albino Rats when compared with Staffelhagen's Procedure in Brazilian Long-tailed Monkeys ", which no subeditor would pass unsubedited. It's a good title in its way, but admittedly it lacks punch, offers no positive incentive to the reader.

Rooting myself in tradition I have looked over some of my great-grandfather's books, but: " On Afthma—being a Comprehenfive Difquifition upon itf Caufe, Prevention, and Cure Ufing Diverfe Phyfic, Second to None in the Britifh Empire " somehow doesn't sound quite right, even if I did change the wording to suit my rats. Or I might go all Transatlantic and come out with a challenging title like " Does Phyllobothrium Make Rats Anxious?" or, even more challenging, just " RATS!" Then there's the possibility of something allegorical like " Rats through my Crystal Ball ", or I could borrow something from the classics like " To Grunt and Sweat under a Weary Life ", subtitled " The Experimental Rat in Times of Trouble ".

On the whole I think I had really better leave rats out of it; other people don't like them as much as I do, and maybe a mention in the title might not make the impact on the general reader that it ought. It must be something *attractive*, to make people sit up and get half-way through before they realise how shatteringly dull it all is. Then my name will be indelibly printed on their minds as that bloke who did the unusual work on anxiety. How about " A New Approach to Anxiety "? Better, but people shy off these psychiatric-sounding words. I ought to stay organic: perhaps a snappy combination would be the thing, like " The Relation of Lesions of the Caudate Nucleus to Anxiety ", which sounds much more as if I've got to the root of something. " The Caudate Nucleus and Anxiety " ? ? Oh! I don't know: maybe " Rats!" was best after all.

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The politicians seem quite unworried about my grandchildren. As Woomera, Cape Canaveral, and (until recently) somewhere in the tundra have been assaulting their genes, I have a clear responsibility to counter with firm defensive steps. In my favour is the fact that their mother is now, rather proudly, 4. My least responsibility is to try to offer her children correct closure of their cardiac foramina and ductuses, and early spring seemed a convenient time to channel the german measles virus our way.

The bush-telegraph duly reported Victoria on the first day of her rash. My wife regarded this as a strictly clinical occasion, calling for the proper case-management of this obverse preventive medicine. Other families clearly thought the responsibility lay elsewhere. Victoria, surrounded by attendant mothers with an improbable number of daughters, sat nauseated but happy, accepting ever more chocolate which seemed to be the correct, the conventional, or, perhaps, merely the ritual offering. There was a chorus of " Now, kiss *poor* little Vicky with her spots."

It wasn't my fault that nothing happened, nor am I in any way to blame that a chance contact a couple of weeks later produced real measles. Perhaps medical training has unsuited me for causing disease.

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PERIPATETIC PRACTICE

I went to see my doctor
(There were three partners more)
But I forgot that it was not
His one weekend in four.

I rang up a physician
But found he was away
At some immense world conference,
Somewhere in U.S.A.

I rang up a chirurgeon
Reply came " Not at home,
Some day this week he's due to speak
At Brussels or in Rome."

The thought comes to my brain
When next I have my pain
All on my own I'll telephone
Health-Castle One, in Spain.

Letters to the Editor

THE RUSSIAN VACCINE

SIR,—The letter by Dr. Liversedge in your issue of June 7 draws attention to the very troublesome situation which has developed following the publicity which has recently been given in the Press and in Parliament to the Russian vaccine.

Like him we have had a large number of requests from despairing patients and their relatives for treatment with this vaccine and it has been difficult to make them understand just how speculative this treatment is and how unlikely are the chances of cure. Even if disseminated (multiple) sclerosis is regarded as a virus disease it would be unique if injection of its killed virus brought about a cure once the disease was established.

Two years ago, by the courtesy of Professor Sarkisov of Moscow, we received a quantity of this vaccine and since then we have used it in the treatment of 14 patients who had disseminated sclerosis (11 in the Western Infirmary and 3 in private). In all patients a full clinical history was taken and a careful assessment made of the nervous damage. Before treatment was started a full explanation was given to every patient and his or her relatives of its experimental nature and our doubts of its efficacy. In accord with the instructions provided, an intradermal test using 0·2 ml. vaccine was done, as those showing a marked reaction should have intradermal vaccination and negative reactors should have larger dosage subcutaneously. Of our patients only 4 showed marked local reactions; 2 of these were early acute cases and 2 were of several years' duration. Because of the limited amount of vaccine at our disposal, and our very tenuous information as to its composition and toxicity, it was decided to treat all the patients of this first series intradermally.

Of our total of 14 cases, 1 has since died of intercurrent urinary infection, and 3 are now bed-ridden. 4 patients state that the treatment has had no effect on their illness and 6 claim to be improved. A careful examination of these six patients shows no objective evidence of improvement of the nervous damage. Of these 6 patients only 1 had a marked primary local reaction to the vaccine, and they included both early and late types of the disease. In another case—a young girl with acute disease and a strongly positive skin reaction—evidence of spreading damage to the nervous system was obvious during and after treatment.

We think, like Dr. Lhermitte of the Saltpetrière, that these results could hardly be regarded as encouraging.

The recent statement by Professor Dick that injection of the virus into animals was followed by the appearance of Negri bodies in the brain is certainly disquieting. At least we can say that so far we have not encountered any definite deleterious effect.

In a disease like disseminated sclerosis in which spontaneous remissions and exacerbations are the rule, and in which there is very often a large functional overlay, it is very difficult to assess the value of any form of treatment unless it is applied to a number of cases over a long time. If this vaccine has curative properties we feel that out of our 14 patients we should have had at least 1 or 2 definite successes in the two-year trial period.

The criticism may be advanced that our results in some cases would have been different if we had used larger doses subcutaneously. We can only say that we observed no variation in results between those who had a marked local reaction to begin with and those who did not react at all.

When any new form of treatment for disseminated sclerosis is suggested in the medical or lay Press it is understandable that many hopeless sufferers will immediately feel that they must try it. We are familiar with many of these unfortunate essays in the past—the organic arsenicals, protein shock, globoid bodies, liver extracts, and latterly the copper salts. To prevent sad disappointment and possible exploitation we feel that either this vaccine should be rejected as valueless and possibly dangerous or that some organised and well-controlled trial of it should be made before it is distributed. Our own observations are being continued.

The Western Infirmary, Glasgow.

J. A. W. MCCLUSKIE
GERALD C. TIMBURY.

BLUNDERBUSS WOUND OF THE ABDOMEN

SIR,—Gunshot injuries of the abdomen are still rare enough in central London to excite interest. The case here reported—an injury by a blunderbuss—is probably unique during the past hundred years, and research by the firearms department of New Scotland Yard has failed to discover any parallel instance. This report is made because of the unusual circumstances of the infliction of the injury rather than because it has any particular or important contribution to make to the surgery of trauma.

A man, aged 58, was admitted to the Middlesex Hospital on June 30, 1949, in emergency, with a penetrating gunshot wound of the abdomen. Since he was shocked and bleeding steadily from a 1 in. puncture wound at McBurney's point, he was transferred immediately to the operating-theatre where resuscitation was started. No exit wound was found, and a plain radiograph showed a ball lodged on the surface of the ilium (see figure). Since rapid transfusion did not produce correspondingly rapid clinical improvement, operation was performed on the assumption that he was bleeding from mesenteric vessels. Through an oblique incision, excising the wound, a large laceration of the mesentery was dealt with. The terminal ileum had been breached in two places and the ball was located by the finger of Mr. L. Atkinson, who was assisting; the ball was embedded in the iliacus muscle immediately lateral to the right ureter, which was undamaged. The ball was removed and the gut repaired. No efforts were made to search for the accompanying debris, save what could easily be seen or felt. Two large drains were inserted through separate incisions and the wound was closed. The patient received the standard "battle" postoperative treatment of those days—i.e., suction and intravenous therapy, anti-tetanus serum, anti-gas-gangrene serum, soluble sulphonamides, and penicillin. There was no obvious gross infection, and he had two spontaneous bowel actions on the fifth day. Two years later, in 1951, he needed repair of a small incisional hernia through one of the drainage openings. Following this he was free of the symptoms of wind and distension which he had had since his injury. He remains well.

Shot from blunderbuss.

The story of the wound is this.

An eminent consulting surgeon, having attained his well-earned retirement, was moving from his house in the Harley-Street area. Having no further use for an old gun which had

adorned his wall he presented it to his manservant, who, delighted by this evidence of his master's regard, bore it down to his basement workshop to furbish it up. It was a brass-finished, bell-mouthed blunderbuss of percussion-cap type, and since the touch-hole did not yield to simple probing, the patient decided to burn out the occluding debris with a blow-lamp. He did this in his vice and then laid the gun down with the barrel pointing towards him and the butt pointing away from him further to clean out the bore. At this point, to his surprise, it went off. The ball was $1^1/_4$ in. in diameter and was composed of multiple small segments of rusty iron, resembling chopped-up nails fused together by lead.

The former owner of the gun later made an interesting point. It had previously hung in the house of his mother in Ireland and had never, to the knowledge of anyone in the family, been used or touched. It is probable, therefore, that the loading dates back up to a hundred years, since balls of this type were not readily obtainable even in the more recent " troubles ". This long lapse of time between loading and discharge is, though not unrecorded, unusual, and would seem to raise a point of what, for want of a better term, may be called preventive surgery. Despite the efforts of our export trade there may yet be a few antiques remaining in this country and some weapons among them. It would seem prudent for an owner of such heirlooms gingerly to insert a ramrod down the muzzle and to compare the internal with the external length of the barrel to the touch-hole or flash-pan. If a discrepancy exists it might be wise to seek the advice of a gunsmith. On no account should a " do-it-yourself " attempt be made to withdraw the charge.

London, N.W.1. J. H. LEES FERGUSON.

HÆMORRHAGIC DIATHESIS AND OVARIAN DEFICIENCY

SIR,—The problem of hæmorrhagic diathesis in association with ovarian dysfunction, rather than deficiency, has interested me keenly for some time, and this interest was lately enhanced by Dr. Wells' article in your issue of April 26. However, before accepting the proposition that the case he describes is a hæmorrhagic diathesis due to ovarian dysfunction, or that more nebulous condition " hormonal imbalance ", I think several points must be decided.

First, the " atrophic " ovary never reached the pathologist for microscopical inspection; ovaries are notoriously difficult to assess from a functional point of view at laparotomy, and section is the only way to ascertain whether or not there is any activity of the follicles. Even this can give only limited knowledge and until serum-hormone assays can be done routinely it will be extremely difficult to accept naked-eye reports of functional activity. Furthermore, one ovary may not be as good as two, but many women manage normal function on a single ovary; I do not think the absence of the patient's right ovary should lead Dr. Wells to assume any degree of hypofunction in the contralateral organ.

My second point is somewhat similar—namely, that neither anatomy, histology, nor cytology give much indication of absolute function. My own experience of these cases, from a laboratory point of view, is that although the platelets show normal morphology they are not functionally fully active, and this is borne out by the work of P. de Nicola et al. (personal communication). They showed that during the normal menstrual cycle there is a marked fall of platelet activity just before, during, and immediately after menstruation; my own findings were that in menorrhagia some women maintain this state of depressed platelet function for as long as the bleeding may last, and at times for considerably longer. All sorts of vicarious menstruation may also be met with during this period of platelet dysfunction. This can easily be assessed by serial thromboplastin-generation tests, using a standard count of one million platelets per 0·1 ml. in the test and comparing it with a similar number of control (normal) platelets. Dr. Wells does not make any mention of platelet activity, which, to me, appears to be a major omission. He also states that the patient's plasma was mixed with varying proportions of normal plasma and no coagulation defect found: if, as one assumes, the patient's plasma was platelet-free or platelet-poor, this is not a surprising finding. It is a pity, therefore, that no evaluation of platelet function, per se, was attempted.

Thirdly, the difficulty of controls: if women with and sometimes without menorrhagia are subjected to Hess's test, a fair proportion will be found to be positive. This is the difficult point for interpretation; Stefanini and Dameshek [1] state that œstrogen increases capillary fragility and permeability; Salvatore [2] found that the capillary fragility was increased during normal menstruation, at which time there is an alleged withdrawal of the ovarian hormones. Nevertheless, there are well-authenticated cases of purpura simplex occurring at the time of menstruation. The permeability of the capillaries, both endometrial and general, is no doubt influenced to a great extent by various hormones; and Dr. Wells has given us another example of this by showing that the capillary permeability can, in some or occasional cases, be controlled by judicious hormone therapy. This is, in my opinion, the main value of his article on this vexed but fascinating subject.

East Fremantle, West Australia. A. K. FRAZER.

THE DANGEROUS WATER-STERILISER

SIR,—May I enlarge upon the noteworthy summary given by Dr. Behr (June 14) of the dangerous defects he has observed in tank forms of water/saline autoclaves in connection with outbreaks of theatre infections?

A large proportion of these tanks at present installed in the surgical theatres of this country are not in fact sterilisers but merely steam-coil boilers (disinfectors) working at less than 100°C; in addition these boilers possess no safeguard against recontamination by any one of several routes.

Three different makes of water/saline tank-form autoclaves were examined recently; apart from automatic control, they incorporated all modern developments in design including (*a*) automatic cleaning and sterilisation of the air filter and the water-level gauge glass during each sterilisation run; (*b*) means to prevent recontamination of the tank contents from a leaking filler valve; and (*c*) attachments for sterilisation of the outlet faucet whenever required.

Each autoclave was designed for mains steam only and was operated by means of hand stop valves; cooling coils were fitted to the " hot " as well as to the " cold " tanks. The minimum number of stop valves to be manipulated during routine operation was 6 (12 for each pair) but, in addition, there were at least 4 further stop valves (8 per pair) to be manipulated when necessary. Though these sterilisers were of the most highly developed hand-operated designs—and costly in consequence—their operation was found to be too complicated and time-consuming for use in busy modern theatre suites. Further the continued sterility of the contents could not be assured since no stop valve remains bacteria proof and continual re-sterilisation of the outlet faucet proved impracticable; even the incorporation of automatic control would not have circumvented the latter difficulty. This confirms Dr. Behr's conclusion that " only a bottled supply of autoclaved water can be guaranteed to be sterile ".

For this reason and influenced no doubt by the findings of Walter [3] and Perkins, [4] tank forms of autoclave are being replaced in both the New World and on the Continent by a system evolved for the supply of all theatre sterile fluids in bottled form. The plastic pouring lip of each glass bottle is maintained in a sterile state by means of an easily removable cap. A suitable stock of fluids is maintained in the theatre itself

1. Stefanini, M., Dameshek, W. The Hemorrhagic Disorders. New York, 1955.
2. Salvatore, C. A. *Surg. Gynec. Obstet.* 1952, **95**, 13.
3. Walter, C. W. The Aseptic Treatment of Wounds. New York. 1948.
4. Perkins, J. J. Principles and Methods of Sterilisation. Oxford, 1956.

and bottles for immediate use are stored in warming cupboards automatically maintained at requisite temperatures—e.g., 82° C for hot packs.

I feel sure that in his introductory paragraph Dr. Behr does not intend to lend countenance in any way to the use of inefficient dressing sterilisers—e.g., those with inadequate air filters through which, after sterilisation, the load may be recontaminated not only by pathogenic spore-bearing species but also by coccal organisms.[5]

Royal Infirmary, Edinburgh. J. H. BOWIE.

THE ROLE OF VITAMIN B_{12} IN CARBOHYDRATE METABOLISM

SIR,—Since the discovery of cyanocobalamin (vitamin B_{12}) in 1948, and its crystallisation, it has been found to have not only anti-anæmic but also neurogenic and metabolic functions.

We now suggest that vitamin B_{12} is concerned in carbohydrate metabolism, probably through the synthesis of glutathione, which was found in reduced amounts in the red cells in pernicious anæmia in rats deficient in vitamin B_{12}. These rats were also less able to reduce glucose to ribose than normal rats [6 7]; ribose is important in carbohydrate metabolism as it enters into the adenosine phosphates (mono, di, and tri) which enter into the process of breaking down glucose to pyruvic acid through many steps. Ribose also enters into the formation of coenzymes I and II, which are essential for further breakdown of pyruvic acid to CO_2 and water.[8] Further evidence of the relation of vitamin B_{12} to carbohydrate metabolism lies in the fact that it abolishes the hyperglycæmia induced in rats by cortisone or large amounts of glucose.[9]

In the light of this and of the current trials of vitamin B_{12} in the treatment of diabetic neuropathy, it has occurred to us to study the role of this vitamin in carbohydrate metabolism, both in normal people and in diabetic patients, where there is disturbance in this metabolism. The following experiments were carried out in 28 patients admitted to the department of medicine.

Insulin sensitivity.—Insulin sensitivity was tested, then 1000 μg. of B_{12} was given daily for two days and the test repeated. Of 20 subjects, 15 became more sensitive to insulin than before receiving B_{12} with a drop of between 30 and 150 mg. of glucose per 100 ml. (fig. 1).

Intravenous glucose-tolerance curve.—This test was done with and without the addition of 1000 μg. of B_{12} intravenously, in an attempt to find out whether any possible action of it is through the liver directly. The curve became flatter in 4 out of 5 cases (fig. 2).

Hyperglycæmia.—The effect was observed of vitamin B_{12} on the glucose-tolerance curve and insulin sensitivity in 5 diabetic patients and 3 normal people made hyperglycæmic by prednisone. The glucose-tolerance curves became more normal on B_{12}, and the subjects became more sensitive to insulin—i.e., the hyperglycæmia induced by prednisone was partly abolished by B_{12} (figs. 3 and 4).

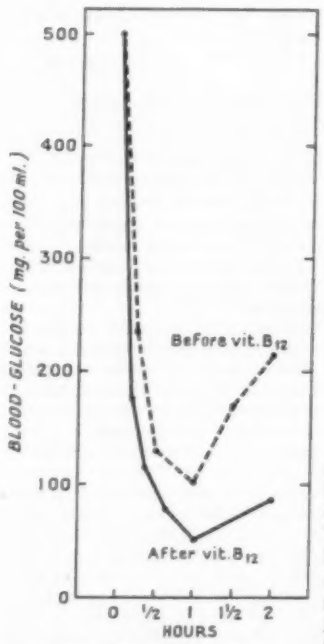


Fig. 1—Insulin-sensitivity test.

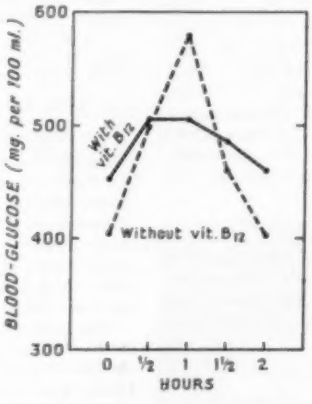


Fig. 2—Intravenous glucose-tolerance curve.

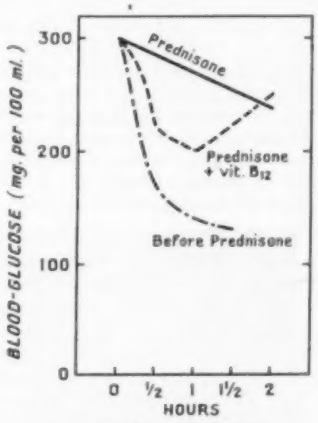


Fig. 3—Insulin-sensitivity test.

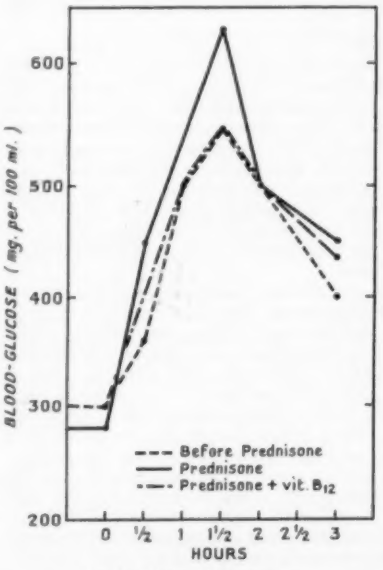


Fig. 4—Glucose-tolerance curve.

These results may possibly be explained through the following mechanisms:

1. Vitamin B_{12} is important in the formation of adenosine triphosphate, which is essential for phosphorylation of glucose, and as insulin also probably acts on this stage through acti-

5. Howie, J. W., Timbury, M. C. *Lancet*, 1956, ii, 669.
6. Ling, C. T., Chow, B. T. *J. biol. Chem.* 1952, **198**, 439.
7. Ling, T., Chow, B. T. *ibid.* 1953, **202**, 445.
8. Wright, S. Applied Physiology, pp. 844–853, 913. London, 1952.
9. Binkley, F., Christensen, G. M. *J. biol. Chem.* 1951, **192**, 575.

vation of the hexokinase system, B_{12} may be synergistic with insulin in this step.

2. Vitamin B_{12} may favour transformation of glucose to glycogen, in a way which may or may not be similar to that of insulin, as suggested by improvement in the intravenous glucose-tolerance curves.

3. Vitamin B_{12} may have an insulin-like action, because it abolishes hyperglycæmia induced in rats by administration of large amounts of glucose (which exhausts the islets of Langerhans).[8]

4. Vitamin B_{12} may antagonise some of the metabolic effects of corticosteroids on carbohydrate metabolism,[10 11] for it reduced the hyperglycæmia induced or aggravated by prednisone in man and improved both the glucose-tolerance curves and insulin-sensitivity test.

Department of Medicine,
Alexandria University.

A. E. DARWISH
M. ESSAM FIKRY.

SAFETY IN PROSTATECTOMY

SIR,—I was disappointed to find no reference to the late Wilson Hey in your leader of May 3.

He first adopted immediate operation for all cases in 1940 and worked on the idea until his publications of 1945 and 1946 (*British Journal of Surgery* and *British Medical Journal*), in which he coldurfully disposed of all catheters and preliminary drainage. These papers caused immense interest, and Professor Wells was outstanding in adopting the heresy, although I notice here he mellows the message and gives these words to another: " more patients die by the catheter than by prostatectomy ". Wilson Hey would never have said that: " every patient ", he would have said, " dies by the catheter, and none by my prostatectomy ".

If he had been right, and if preliminary drainage was deadly, his " immediate operation " would have been a remarkably brilliant introduction, but adopting the method without reservation at Ancoats Hospital I found that in a series of over 300 cases the retained patient beyond seventy years of age carried a heavy risk with urgent operation, overwhelmingly heavy in comparison with his coevals without retention, and his juniors with or without retention: practically all the mortality was crammed into this one group.

It seems to me, therefore, that McEachern's reaction to preliminary drainage is necessary only for this older patient with retention, and I would be sorry to see a complete surrender of Hey's doctrine and its attractve simplification of method.

Manchester. OLIVER JELLY.

DEATH OF A BOXER

SIR,—In Dr. Lyburn's long and distinguished career in the ring I am surprised that he cannot recall cases of cerebral injury.

In hospital outpatients, as a student, I saw a case of subdural hæmorrhage in a professional boxer, and was told later that he had died. Our school instructor's son neglected a medical warning to give up his professional career and became blind. Among ringside habitués Dr. Lyburn must have met the odd punch-drunk, a victim of repeated minor trauma.

In the amateur world damage is not likely to be as serious, a rough calculation shows that in five years at school and hospital I must personally have had between one and two hundred blows hard enough to stun momentarily without dropping, in addition to not a few heartier ones, without the production of any gross dementia now. Looking back, perhaps I should have had my head examined!

There was the occasional man hazy for a while after a bout. I remember two amateur light-heavies carried from the ring with concussion of longer duration than the ten second knock-out. In both confusion and amnesia lasted for days. Similar injuries, of course, occurred in team games, but in a smaller proportion of participants.

It is the possibility of insidious blunting of the intellect which is the danger, but of which there is no present evidence (except in the punch-drunk). If there are intelligence tests delicate enough to detect any deterioration, perhaps the testing of a series of boxers at the beginning and end of their careers would produce the evidence, for or against, required by Dr. Byrom.

Ilford, Essex. R. N. COMPTON SMITH.

STAPHYLOCOCCAL INFECTIONS IN HOSPITAL

SIR,—In your leader of May 17 you wisely draw attention to the high incidence of staphylococcal infection and the danger of cross-infection in hospital practice.

All conscientious clinicians are greatly concerned about this problem but we would wish to disassociate ourselves completely from your suggested remedy—the appointment of a hospital infection officer. The British medical profession has been nationalised but there is no reason why we should follow the Civil Service procedure of creating new posts in order to share out responsibilities which are, or should be, already adequately covered. Nor do we require to follow the fashion of today, medical and otherwise, of looking westwards across the Atlantic before we make our own plans.

It would be pertinent to inquire who would be appointed to the post: you suggest a man senior in years and of consultant status. Is he to be a clinician, a bacteriologist, an epidemiologist, or a rare hybrid with unusual experience in all three? Do you suggest that this infection officer should conduct an inspection of the hands and nails of the hospital staff like a major-domo examining kitchen boys, or would you wish him to advise consultants on the proper management of their medical and nursing staffs? The consultant in charge should not need to be told what is happening in his unit, he should know for himself when and where infection exists. Nurses with boils on the nose do not remain on duty because the medical staff do not appreciate the danger, but because of the gross shortage of nurses.

The prevention, investigation, and control of infection in any part of a hospital is surely the direct responsibility of the clinician in charge of that section, working in cooperation with the bacteriologist, whose duty it is to keep a watchful eye on all forms of cross-infection, and constantly to exercise his detective qualities in tracing any source or possible source of danger. The introduction of a third party in the person of a " hospital infection officer ", can only create a barrier between clinicians and the hospital bacteriologist and prevent that close collaboration which is essential.

Hospital medical staffs are fully aware of the dreadful state of affairs which permits the washing of bedpans in patients' baths, the prolonged use of contaminated curtains, inadequate washing and toilet facilities, and out-of-date theatre equipment. These problems should be tackled by the administration acting on the advice of the medical staff, which should be fully represented on the hospital house committee.

The efficiency and safety of hospital sterilising procedures is the day-to-day concern of the bacteriologist who should have access to wards, sterilisers, operating-rooms, toilets, laundries, &c. If this does not provide the whole answer, and if the higher flights of ecology, pathogenesis, immune relationships, and variability of staphylococci are the important matters, then surely these are also the concern of the hospital bacteriologist who is perfectly competent to deal with them.

The present dangers of staphylococcal and other infections constitute a challenge which must be met by the clinicians in direct charge of their patients. We most emphatically believe that the appointment of a hospital

10. McArthur, J. W., Gautier, E., Swallow, K. A., Godley, A., MacLachlen, E. A., Terry, M. L., Hume, D., Crepeaux, G., Sinione, F. A., Keitel, H. *J. clin. Invest.* 1954, **33**, 437.
11. Wartham, J. T., Headstream, J. W. *Diabetes*, 1954, **3**, 367.

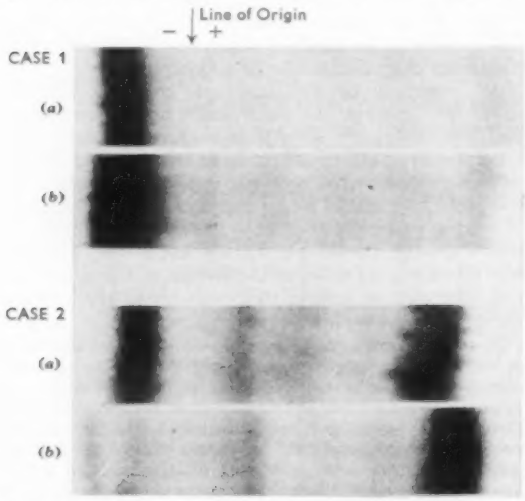
infection officer would achieve nothing, would add confusion to a difficult problem, and would constitute another memorial to the ancient cult of "passing the buck".

Stobhill General Hospital, Glasgow, N.1.

JOHN HUTCHISON
JOHN S. STEVENSON.

UNUSUAL URINE PROTEIN IN MYELOMATOSIS

SIR,—Cummings [1] reported three bands in the gamma-globulin region of urine proteins in a case of myelomatosis. We have observed two bands in this region in case 2 (see accompanying figure), although myelomatosis generally gives serum- and urine-protein patterns as in case 1. The smears from the sternal bone-marrow in case 2 showed numerous plasma cells and "grape cells", as described by Stich et al.[2]



Serum and urine proteins in 2 cases of myelomatosis: *a*, serum; *b*, urine.

Biochemistry Department, Madras Medical College, Madras, India.

NINAN VERGHESE.

REVERSAL OF SUXAMETHONIUM PARALYSIS WITH NEOSTIGMINE

SIR,—In 1952 I reported [3] a case of reversal of suxamethonium-chloride paralysis with neostigmine. Since then I have not had a case of prolonged apnœa until last month, when I anæsthetised two sisters, aged 9 years and 7 years, for tonsillectomy.

Both children received premedication of 'Omnopon' and scopolamine appropriate for their weight; both were induced with hexobarbitone and suxamethonium bromide, and maintained on N_2O and O_2. The younger child at the end of her tonsillectomy, unlike her sister, was not breathing spontaneously.

During the next half-hour she was given nalorphihe, nikethamide, and methyl phenidate ('Ritalin'), with no response. By this time it was established in my mind that the apnœa was due to the suxamethonium bromide solely, so I gave her gr. $^1/_{100}$ of atropine followed by 2·5 mg. neostigmine with almost immediate return of respirations, and no relapse.

The relaxant was sent to the manufacturers who reported that it was normal in strength and quality. Specimens of serum from both girls were also taken but unfortunately the person to whom they were entrusted for analysis died suddenly and they cannot be traced.

Dr. Bullough reports [4] a similar case in which he used edrophonium before neostigmine, which makes me think that the risk of prolonging the apnœa by the use of anticholinesterases is not so great as is generally believed; in fact, as Dr. Bullough suggests, if the action of suxamethonium is prolonged neostigmine will do nothing but good.

Lethbridge, Alberta.

J. SHEGOG RUDDELL.

NOT SO MUTE

SIR,—With reference to your note of March 29 (p. 700), we cannot resist the temptation to point out that American proctologists have not been quite so mute as you believe. They have three outlets already:

(1) *Transactions of the American Proctological Association*, St. Louis. (1889–)

(2) *Proctology (and Allied Subjects)*, Chicago. (1936–)

(3) *American Journal of Proctology* (International Academy of Proctology). (1950–)

And now there is a fourth. Librarians have long wished that the unnecessary proliferation of medical journals would cease.

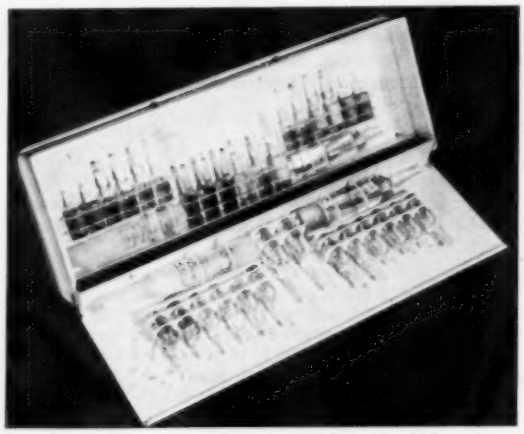
University of British Columbia, Vancouver.

M. DOREEN E. FRASER
Biomedical Librarian.

PORTABLE CONTAINER FOR AMPOULES OF VARIOUS SIZES

SIR,—The ampoule container in the accompanying illustration was designed primarily for the anæsthetist. It enables him to have ampoules of various drugs immediately accessible, and has the advantage that when ampoules have been used the empty space is apparent; the drug used can be replaced, so that the necessary drugs are always available.

The container, which is made of pressed steel, is about 12 in. long, 4 in. wide, and 4 in. in depth. It can be opened at either side, ensuring that the ampoules are easy to remove. It holds twelve 2 ml. ampoules, eighteen of 1 ml., and two each of 4 ml., 10 ml., and 20 ml.—a total of 36 ampoules.



Container for ampoules.

The case is made by Luckham Ltd., 591/3, Kingston Road, London, S.W.20. I am indebted to the photographic department of the Institute of Orthopædics, 234, Great Portland Street, for the illustration.

London, W.1.

G. K. T. ROCHE.

1. Cummings, A. L. *Lancet*, 1957, i, 598.
2. Stich, M. H., Swiller, A. I., Morrison, M. *Amer. J. clin. Path.* 1955, **25**, 601.
3. *Lancet*, 1952, ii, 341.
4. *ibid.* 1957, ii, 804.

PHYSICAL CHANGES IN THE PROLAPSED DISC

SIR,—You were good enough to publish an annotation (June 7) on the difficulties of understanding disc disorders. I wonder if you could not have another on the difficulties of understanding Mr. Charnley's hypothesis (June 14).

My first objection is to his calling it simple, and my second that it introduces a series of unnecessary postulates. Doubtless (I paraphrase his words) he could state that the slow physico-chemical changes of normal senescence are symptomless and the elderly person is much more prone to an attack of incomprehension than those of middle age. Nevertheless may I suggest a simple scheme which does not require a biochemist or a biophysicist to reassure the practitioner, so that he can reassure the patient by explanation of his symptoms: (1) discs wear out; (2) discs are liable to injury; (3) injured or degenerate discs are more liable to injury.

Lumbago is a painful muscle spasm which protects a damaged disc from excessive pressure, and prevents further injury or displacement of tissue. It is proportional in severity or duration to the degree of disc inefficiency.

(1) Minor disc injury = mild lumbago, cured by fibrous tissue repair. (2) Major disc injury or degeneration = acute lumbago, often accompanied by œdema around the disc and subjective disturbance of nerve-root function, repairing slowly, and leaving occasional nerve-root adhesions. (3) Acute prolapse of degenerate disc material due to movement, or of normal material due to severe trauma, produces the fulminatingly acute syndrome of the prolapsed intervertebral disc.

Need we assume that it is necessary to have a raised internal tension in the disc, due to water absorption by mucoprotein, which to fit the theory must be undegenerate, when we have the weight of the body and the force of injury as adequate substitutes? And why must the poor disc be made to go through "the physical changes of senescence in a matter of days or weeks" to explain acute lumbago? Changes in osmotic pressure may play a part in disc physiology, but need we invoke them to explain disc protrusion and lumbago? In short, if this is Mr. Charnley's creed I remain apostate.

London, W.1. J. G. BONNIN.

THE TOURNIQUET

SIR,—Your leader on the tourniquet (May 31) is timely and interesting but has, I think, at least one serious omission. There is no reference to the dangers of the tourniquet in the surgery of severe trauma to the limbs. Where deep lacerations have produced flaps or portions of tissue of doubtful viability the use of the tourniquet may make all the difference between saving a useful portion of the limb or losing it. The use of the tourniquet in such cases to make primary repair somewhat easier seems indefensible, whether the time of application is short or long.

A further point concerns the debridement in this type of case. One has seen surgeons attempting debridement with the tourniquet applied. Under these conditions it is clearly impossible to assess the blood-supply and therefore viability of the various injured parts. Also there is no visible pulsation of the arteries in or near the wound and these can easily be cut in error.

The successive turns of the rubber-bandage type of tourniquet are often applied by someone other than the surgeon and can exert a tremendous compression of the limb. This must add considerably to the number of painful stimuli transmitted to the brain and even under anæsthesia must aggravate shock.

You state that only a pneumatic cuff should be used on the upper limb, but is it not time that a pneumatic cuff large enough for the thigh were introduced and the rubber bandage with all its dangers prohibited?

There should also be a bell, with the impact of a fire alarm, to sound when the tourniquet has been on for 45 minutes.

Naturally no surgeon keeps on the tourniquet for longer than the minimum time he requires, and the operations carried out are designed to reduce the risks of infection. Nevertheless it seems only logical to support Professor Pannett's contention that where the blood-supply to a limb is stopped for a time the risks of infection are increased.

One condition comes to mind where the use of the tourniquet is almost indispensable—a search for a small foreign body in the hand.

West Hill Hospital, Dartford, Kent. P. DRANSFIELD.

OVERSEAS MEDICAL SERVICE

SIR,—As a layman I write with some diffidence on a topic that has been discussed previously [1] in your journal by some distinguished medical correspondents. However, I have recently enjoyed two years in the Middle East as secretary of a Government medical department. The Government concerned was fortunate in having been able, over the years, to obtain the services of a number of good British doctors, who have done very fine work for the people of the country concerned and who have proved themselves to be "medical ambassadors" of the best type.

Whether this high standard of medical service will continue indefinitely is another question. During my two years, there were not many applicants for any of the various medical appointments advertised through the British medical press. This may have been partly due to the turbulent political conditions in the Middle East, but the biggest difficulty undoubtedly seems to be that, under the present National Health Service system, many good doctors are reluctant to accept posts abroad because of the great difficulties of getting back "into the swim" again should they wish to resume work in this country. It seems almost equally evident that a system of secondment, as outlined in your columns by Mr. Seddon and other correspondents in 1956, would do much to obviate these difficulties. It would also do much to help provide the underdeveloped countries with the improved health services which they so desperately need, and at the same time provide British doctors with better opportunities for periods of service abroad—service which, to judge from some of those who have been abroad, is extremely interesting, enjoyable, and worthwhile.

In writing this letter, I do not pretend to be able to add anything to the suggestions made in 1956. However, I am not aware that much progress has been made in this field since then. Meanwhile, it is probably fair to say that the situation overseas with regard to this problem certainly does not seem to be improving, and there is greater need than ever for the "medical ambassadors" to whom Mr. Roaf referred. It seems also to be the case that there may still be "a surplus of good men in the United Kingdom" as Mr. Seddon mentioned in 1956.

Perhaps the matter could be considered to fall within the terms of reference of the working party recently appointed by the Government to review the problems of medical staffing and manpower.

London, S.W.5. M. C. HARDIE.

SIR,—The Commonwealth is the Phœnix struggling from the ashes of the Empire. May I suggest that from the ashes of our Colonial Medical Service we build a Commonwealth Medical Service directly responsible for its own administration and control to some body representing the countries of the Commonwealth. Were the service well run and afforded proper status it should attract capable and experienced men and women.

Such a service could be financed by all in the Commonwealth, with the wealthier countries bearing propor-

1. Seddon, H. J., *Lancet*, 1956, i, 46. Roaf, R., *ibid.* p. 101. Nassau, E., *ibid.* p. 205. Annotation, *ibid.* 1956, ii, 28.

tionately greater costs. Conversely the less-advanced countries would receive most of the services; this would surely be a material and worth-while contribution by the wealthier countries to the less favoured. The wealthier countries' gain would be in the greater experience and the wider and more profitable use of their doctors.

The intangible gains to all nations of the Commonwealth would be great, as such a service would bind them closer. Eventually it could even attract new members, thus laying the foundation for a wider and greater Commonwealth, even though it meant finally abandoning the limiting prefix " British ".

Department of Health, Auckland, New Zealand. A. S. WALLACE
Medical Officer of Health, Auckland.

*** The supply of doctors for Colonial territories, which was raised at question time in the House of Commons last week, is mentioned in our parliamentary report on p. 1396.—ED. L.

CARDIAC SYNCOPE ASSOCIATED WITH VOMITING

SIR,—We should like to describe a case of a syndrome similar to that recorded by Dr. James (April 12).[1]

A housewife, aged 48, had been admitted to hospital three times and twice extensively examined in clinics because of fainting spells connected with vomiting. During one of the admissions, recurrent cerebrovascular accidents were suspected.

After such a fainting attack, an electrocardiogram (E.C.G.) showed a short period of 2 : 1 and 3 : 1 atrioventricular (A-V) block, during which consciousness was normal (fig. 1).

There were no history or clinical signs of heart-disease. The vomiting associated with loss of consciousness hinted at the possibility of vagal stimulation as a precipitating factor.

Pressure on the right eyeball (while the patient was still connected to the electrocardiograph) caused continuous A-V block (2 : 1, 3 : 1, and 4 : 1) (fig. 1*b*). Spontaneous vomiting was followed by loss of consciousness while the tracing was isoelectric except for P waves (rate 38 per min.) (fig. 1*c*). After a short 2 : 1 A-V block, sinus rhythm reappeared with lowering of the T wave down to the isoelectric line (fig. 1*d*). After several minutes, spontaneous A-V block occurred—with no clinical equivalent, because ventricular contractions were frequent enough (fig. 1*f*).

1. Weiss, S., Ferris, E. B. *Arch. intern. Med.* 1934, **54**, 931.

Fig. 1—*a*, spontaneous A–V block with subsequent reversion to sinus rhythm; *b*, after pressure on the right eyeball; *c*, *d*, *e*, loss of consciousness with vomiting; *f*, recurrence of spontaneous A–V block

X-ray examination of the œsophagus disclosed a diverticulum of its anterior wall (fig. 2). The patient did not relate her attacks to swallowing or drinking, but to vomiting only. Neither solid food nor pilocarpine caused attacks. An attempt to introduce the metal-olive of a tube into the diverticulum caused no change in the sinus rhythm. All other investigations were normal.

Treatment consisted in continuous administration of atropine in small doses. Three months ago the patient was discharged from the hospital. She is well and is still taking atropine.

Our patient has no organic heart-disease and thus differs from Dr. James' patient. Digitalis had not been given, as it had in Correll and Lindert's case.[2] Thus, our patient comes closest to the one described by Weiss and Ferris,[1] the first recorded case of which we are aware.

In our patient, a vago-vagal reflex was presumably initiated in the œsophageal diverticulum, as in all the three published cases. Here, however, neither swallowing nor drinking, but only strong vagal stimulation (such as vomiting or pressure on the eyeball), could elicit the attacks.

Fig. 2—Barium swallow showing œsophageal diverticulum.

Hasharon Hospital, Petah-Tiquah, Israel. J. SHAPIRA
N. VARSSANO.

ACQUIRED OSTEOGENESIS IMPERFECTA?

SIR,—Osteogenesis imperfecta is generally described as a hereditary affection for which there is yet no effective treatment. We have seen no description of a non-hereditary form of this disease, and the following case could be a non-hereditary condition, particularly since efficacious treatment was possible.

In May, 1957, I saw a girl, then aged 2 years and 7 months, who had had many fractures due to minor trauma. She had previously been examined in a university clinic. The report included: " blue translucence of the scleræ, skeletal X-rays revealed gracile features. The compact layer was very thin. Blood calcium, phosphorus and phosphatase values were normal ". On the basis of these findings the condition was diagnosed as " osteopsathyrosis ". It was subsequently found, however, that the parents were unaffected and that the two family histories included no suspect case of bony fragility.

She was a delicate, pale child. Apart from excessive flexibility of all joints there were a number of signs of dysproteinæmia, such as I had seen in Java during the Japanese occupation. Insomnia was severe, the skin dry and withered, and development retarded (height 91 cm., weight 11·5 kg.), and there were signs of hypoproteinæmia compensated by dehydration. The erythrocyte-count was 5,090,000 per c.mm., Hb 94% (Sicca), and a low erythrocyte-sedimentation rate (E.S.R.) 2 mm. in 1st hour, 6 mm. in 2nd (Westergren). The total blood-protein value was 6·8 mg. per 100 ml.

Although this case may have been one of osteogenesis imperfecta it cannot be referred to as Lobstein disease, since the hereditary factor was lacking. The

2. Correll, H. L., Lindert, M. C. F. *Amer. Heart J.* 1949, **37**, 446.

condition was possibly acquired and symptomatic, in which case it was probably a sequel of dysproteinæmia. In the "hunger camps" of Java adults suffered from osteoporosis with spontaneous fractures as a result of protein (or general) deficiency. An explanation of the hypoproteinæmia in this case might be found in pancreatic insufficiency, since there was considerable creatorrhœa.

The girl was treated with a high-protein diet and pancreatic enzyme ('Cotazym' tablets). She was also given injections of the synthetic anabolic *nor*-steroid, nor-androstenolone phenylpropionate ('Durabolin'). The initial dose was $^1/_2$ ml. (about 8 mg.) every two weeks, subsequently reduced to the same quantity once a month. After seven months her appearance had considerably improved; she was alert and active and had shed her fear of falling. The creatorrhœa had disappeared. Body-weight had increased to 15·4 kg. and height to 102 cm. The E.S.R. had risen to 4 mm. in 1st hour, and 13 mm. in 2nd, and the total blood-protein to 7·2 mg. per 100 ml. During the initial period of treatment she still had an occasional fracture under mild strain (e.g., turning while standing on a car seat). Since the seventh month after treatment began, however, she has had no further fractures in spite of increasing activity and playfulness, which involved repeated falls causing swelling and even hæmatomas. The blue discoloration of the scleræ has not changed.

Lochem, Holland. A. K. J. KOUMANS.

TREATMENT OF ASTHMA AND HAYFEVER BY HYPNOSIS

SIR,—Having rejected the "intradermal, patch, scratch and prick" tests, we are grateful to Dr. Pepys (June 7) for finally putting us right about the "multiple-pressure" test, which turns out to be only the "prick test" masquerading under another name.

Clearly, publication in your journal has many advantages, not least of which is the subsequent dialectic analysis in the correspondence columns and the varied suggestions as to how future research should be conducted. Not all these, however, are very easy to understand. We learn from Dr. Moynahan (June 14), for example, that in order to find out how suggestion works, we should make controlled studies of random samples of the population. We are under the impression, on the other hand, that such studies would indicate only *if*, not *how*, such treatment works—and, of course, as now stated several times, the therapeutic effects were never under investigation anyway.

As we see it, investigations of the effects of suggestion under hypnosis can only be carried out on hypnotised subjects who respond to suggestion—and the controls should be unhypnotised subjects, or hypnotised subjects to whom no suggestions or different suggestions have been made according to the nature of the experiment. The attempted hypnosis of random samples of the population would show, as is already well known, that 20% can be put into a deep trance, 35% into a medium trance, 35% into a light trance, and that 10% will be unhypnotisable—by any single therapist. 10% of these in turn will fail to react to any attempt at hypnosis by anyone, leaving a hard core of 1% of unhypnotisable individuals in the population.

To carry out our investigations—quite apart from suitable patients, who are rare—we have a rota of about 10 deep-trance subjects, most of whom have been well conditioned to go into a deep trance on the speaking of a single code word: thus saving time otherwise wasted on induction at experimental sessions. These helpful people provide the experimental material with which we operate in our attempts to discover *how*, not if, suggestion under hypnosis produces physical changes in the human body.

In addition we should like to thank Dr. Moynahan for his really timely correction of our reference to what we thought was the von Pirquet paper on "the original allergy". If, as seems to be the case, the allergic response to old tuberculin can be inhibited by suggestion under hypnosis, whatever the mechanism, how many of the other manifestations of allergy included in von Pirquet's *allgemeiner Begriff* might respond as well? We hope to find out.

West London Hospital, London, W.6. A. A. MASON
STEPHEN BLACK.

RESIDENTIAL CHARGES ALLOWABLE AS INCOME-TAX EXPENSES

SIR,—Dr. Harvey-Smith's successful claim to deduct residential charges as an allowable expense for tax purposes (May 31) is the result of a directive to Inspectors of Taxes following a successful appeal to the General Commissioners of Income Tax undertaken as a test case by the Medical Protection Society.

May I therefore venture to amplify the information in Dr. Harvey-Smith's letter by pointing out that in that case the General Commissioners allowed the appeal because two essential facts were established:

(*a*) The married doctor concerned was *required by the terms of his contract* to reside at the hospital; and

(*b*) *No married quarters* were available for his use, thus obliging him to maintain a separate home for his wife at which he resided during periods of leave.

To be eligible for this concession, therefore, a resident hospital doctor for whose wife no married quarters are provided by the hospital will have to prove to the satisfaction of his Inspector of Taxes that these two conditions exist.

London, W.C.2. ALISTAIR FRENCH
Secretary, Medical Protection Society.

ÆTIOLOGY OF PRE-ECLAMPTIC TOXÆMIA

SIR,—The crux of Professor Browne's hypothesis (June 14) is that pre-eclamptic toxæmia is caused by deoxycortone (which has not so far been shown to occur naturally), or by another undiscovered mineralocorticoid with similar properties. If any such substance were the cause of pre-eclampsia, it would be reasonable to suppose that a hint of its presence would be reflected in urinary chromatograms in eclampsia. But it is not: in fact, the excretion of formaldehydogenic substances in the urine (which are held to reflect the level of mineralocorticoids in the blood) falls as toxæmia mounts.

Again, overproduction would be expected occasionally in conditions other than pregnancy, unless placental production is alone responsible; but there is sound evidence (from a study of adrenalectomised women [1]) that the placenta contributes barely one-tenth of the corticoids present in pregnancy. The placenta cannot therefore contribute substantially to this hypothetical excess.

The occurrence of eclampsia post partum, and its recrudesence at labour when it had earlier subsided on the death of the fœtus, also indicate that the placenta plays no active role in the ætiology of pre-eclampsia.

Professor Browne holds that there may be no increase in potassium excretion in cortical overactivity, then the absence of an increased potassium excretion in toxæmia when sodium is being retained need not be set against his hypothesis. But that disregards certain data which are impossible to reconcile with his thesis, and which reinforce my view that renal ischæmia is the basis of pre-

1. Laidlaw, J. C., Cohen, M., Gornall, A. G. *J. clin. Endocrin.* 1958, **18**, 222.

eclamptic causation—namely, the reduced glomerular filtration-rate, the glomerular ischæmia (proved by renal biopsy), and the presence of vasoexcitormotor substance (V.E.M.) in renal-vein blood of toxæmic women (this substance never appears in the hypertension provoked by corticoids [2]).

London, W.1. JOHN SOPHIAN.

FIREPROOF CLOTHING

SIR,—Recently, as part of my training in pædiatrics, I had the opportunity to study a child, aged five years, admitted to hospital with severe clothing burns. In the course of this study five shops in South London, specialising in children's clothing, were visited. A total of fourteen salesladies was each asked four simple questions.

Firstly, they were asked which material commonly used in children's attire was most inflammable. Out of fourteen, eight had no idea, two said "flannelette and 'Winceyette'", three said "nylon", and one said "'Tricel'". The work of Colebrook et al.[3] clearly shows flannelette and winceyette to be most dangerous whilst nylon and tricel are relatively safe.

Secondly, each shop was asked how many customers asked questions about the fire risk of the clothes they bought. At three shops the answer was "nobody", at one it was "about one a year", and at the fifth it was "two in nine years' retailing".

Seven of the salesladies knew nothing about the 1954 Fireguards Act, and seven knew of it although most had only a vague idea of its details.

Somewhat surprisingly, nearly all knew of the £10 fine applicable in certain cases to parents whose children suffer burns in the home.

The impression was gained that a large majority of those questioned had relatively little real interest in advising customers about the safety of the clothes purchased. Perhaps this indicates a deficiency in the propaganda directed towards the group of people who retail children's clothing (and probably adult clothing as well) and who are thus best situated to advise their customers about the safety of the articles they buy.

Guy's Hospital, London, S.E.1. E. K. M. SMITH.

TIME AND THE NERVOUS SYSTEM

SIR,—Those who, like myself, find Professor Woodger's definition of Time (June 7) difficult to grasp, may like to be reminded of the late Arthur Robb's definition. This able Irish mathematician surely exhibited a flash of genius when he proposed that Time is simply a matter of "before" and "after". To any ordinary event or experience there are these attributes and Time is the span between them. Watches and clocks are useful servants but they involve no master concepts.

Bognor Regis. SIDNEY RUSS.

2. Shorr, E. Proceedings of the 1st Clinical A.C.T.H. Conference; p. 314. London, 1950.
3. Colebrook L., Colebrook V., Bull, J., Jackson, D. M. *Brit. med. J.* 1956, i, 1379.

Parliament

Proposed Rebuilding of Charing Cross Hospital

ON June 17, on the adjournment, Mr. MICHAEL STEWART drew attention to the proposal to rebuild Charing Cross Hospital and Medical School on the site of what is now Fulham Hospital. The people of the borough, he said, did not want a teaching hospital, they wanted their own local hospital rebuilt. Their objections were: that a teaching hospital on that site would provide 800 instead of 950 beds, would only be able to accept some 200 instead of 700 emergency cases a year, would be unlikely to provide a special geriatric unit, would have to draw its unusual cases from a wide area and would thus have less accommodation for the people of the immediate neighbourhood.

From the point of view of Charing Cross also he thought that the proposal had disadvantages. The Harrow site, originally suggested for Charing Cross, had 47 acres, instead of 9 acres at Fulham; it took as long to travel by underground from Central London to Fulham as to Harrow. The medical school had said that the Harrow site would not provide adequate teaching facilities, but surely the needs of the citizens of Fulham must be considered as well as the needs of the medical school.

Mr. RICHARD THOMPSON, parliamentary secretary to the Ministry of Health, said that it was clear that the shift of population of Greater London required some decentralisation of the hospitals which serve it. This meant the development of hospital services in outer London and the reduction of the former concentration in the centre. Hence it was that successive Ministers had accepted the Harrow scheme, and the Charing Cross rebuilding was selected in 1955 as a major project for early progress. But because of the strong views of the University of London and the University Grants Committee that the Harrow scheme should be reconsidered in the best interests of medical education, the Minister felt bound to seek an alternative solution. Many possibilities were reviewed, and last summer the site of the present Fulham Hospital seemed to provide a reasonable possibility. There was an urgent local need for improved hospital facilities, and the demolition and rebuilding of the existing Fulham Hospital, which was badly damaged during the war, had already been agreed upon. From the medical education angle the site of the Fulham Hospital was closer to the university than Harrow, and within easy reach of the science departments of the university. It was also within the administrative boundaries of the County of London, thus conforming to the statutes of the university.

The new scheme involved the rebuilding of Charing Cross Hospital and Medical School on the site of the Fulham Hospital. The rebuilt Charing Cross Hospital would eventually replace the existing Fulham Hospital, Fulham Maternity Hospital and the West London Hospital. The early regrouping of hospitals would take place, so that the board of governors of the regrouped Charing Cross Hospital could start work in Fulham.

Discussions had taken place with the hospital authorities, all parties agreeing in principle to the proposal. The South West Metropolitan Regional Hospital Board's agreement included provisos that the new hospital should provide district hospital services comparable with those proposed under the board's earlier plans for redevelopment of the Fulham Hospital and that the position of the existing staff should be safeguarded. The board of governors had given assurances that a service fully adequate to the needs of the Fulham area would be provided and that it would accept the transfer of all the staff.

Turning to the objections raised in Fulham, Mr. Thompson said that the modern tendency was to provide a greater variety of patients for teaching purposes to familiarise students with normal cases as well as the more complicated ones which were formerly sent to teaching hospitals, and there was no reason to think that a teaching hospital could not provide a district service while

fulfilling its teaching function. A teaching hospital accepted patients from the Emergency Bed Service although its strict liability to do so did not go so far as that of the non-teaching hospital. But in an emergency he was certain that we could rely on the hospital to help in every way possible.

It was proposed that the new Charing Cross Hospital should replace Fulham Hospital with 382 beds, Fulham Maternity Hospital with 28 beds, and the West London Hospital with 238 beds, giving a total of 648 beds which ultimately would be closed. The board of governors had in mind a hospital with 700 to 800 beds, with the usual range of specialties. This would mean ultimately that the present total of 648 beds in the Fulham hospitals would be replaced in stages by about 750. It was proposed that 10% of the total beds should be allocated for the chronic sick which would give 70 or 80 beds. That was slightly lower than Fulham's present allocation. The regional board recognised the need for more beds for the chronic sick and discussions had taken place about where these might be provided.

The Minister did not rule out a public inquiry, but he was not convinced that it was the best way to proceed. It would entail considerable delay and expense and might not establish many facts or points of view not already known. The proposals had been under consideration, and discussions had been going on since last summer, and the Minister hoped to come to a decision fairly soon.

National Insurance and National Assistance Tribunals

On June 19 Mr. R. E. PRENTICE moved the annulment of new regulations concerning the procedure before these tribunals. The changes made by these regulations were, he said, changes of detail, but they raised points of importance. One change related to legal representation before local appeal tribunals: " Any person . . . may be represented by some other person whether having professional qualifications or not. . . . " This was a fairly big departure from the existing position. At the moment, in cases under the Industrial Injuries Act a claimant might be represented by a legally qualified person with the leave of the chairman; but under the National Insurance Act there was at present no provision for a lawyer to represent a claimant. If it became common for lawyers to argue cases before these tribunals, the atmosphere of the tribunals might be damaged. There was a tendency for a barrister to arrive with a rather wordy brief and to use legal terminology which was not often understood by his client or by some of the non-legal members of the tribunal. The whole attitude of the tribunals might alter even towards claimants who were not legally represented, and we should damage the informal atmosphere. People might get the impression that to succeed they needed a lawyer. People who could not afford a lawyer and who lost their case might feel that if they had had one they would have succeeded.

Mr. Prentice also criticised another proposed change: " Every hearing by a local tribunal shall be in public except so far as the chairman of the tribunal may otherwise direct if he is of the opinion that intimate personal or financial circumstances may have to be disclosed or that considerations of public security are involved. " The National Insurance Advisory Committee had said that hearings should be in public unless the claimant insisted on a private hearing. The regulations suggested that the chairman should decide whether or not a hearing should be in public, and the Advisory Committee thought that the claimant should have the last word. Mr. Prentice believed that the committee's reasoning was sound.

Mr. JOHN BOYD-CARPENTER, Minister of Pensions and National Insurance, referred to " the somewhat anomalous position which has existed so far ". It had been the position that a claimant before a National Insurance tribunal could be represented by a friend, provided that the friend had no legal qualifications. There was one case when an elderly widow who desired to be represented before a tribunal by her son was unable to do so because her son happened to be a qualified solicitor. He did not believe there was any reason to assume that the right to legal representation would be very freely exercised: in only the exceptional case would a lawyer appear professionally.

It was not realistic, he added, to believe that the opening of the tribunals would cause immense flocks of the public to queue up to attend. The Minister held very strongly that justice was much best done in public, and abuses or suspicion of abuses were much better prevented if judicial bodies did their duty in public where the Press could report what was done, and where if anything was done amiss, newspapers, the public, and members of parliament could take the necessary steps. There were circumstances in which someone might genuinely be deterred from going to the tribunal if he felt that intimate and personal matters might be brought out in public; and that was a problem which to some extent faced those who attended courts of law, where closed sittings were very exceptional.

At the end of the debate Mr. Prentice withdrew his motion.

Atmospheric Pollution on Thames-side

In an adjournment debate, Mr. BERNARD BRAINE spoke of the continued pollution of the atmosphere by emanations from the Thames-side oil refineries. Up to a few years ago South-East Essex had a reputation of having almost the purest air in the United Kingdom. Now, although the nuisance was intermittent, it was never far away.

Mr. J. R. BEVINS, parliamentary secretary to the Ministry of Housing and Local Government, replied " quite categorically " that there was no evidence at all at present that these smells were in any sense injurious to health. Nevertheless, he sympathised with those who were assailed by these odours. " Our aim, which is, I believe the aim of the oil companies as well—I emphasise that—is to see that everything possible is done to remove the sources of these complaints in two ways: first of all, by the more rigorous supervision of the plants and, secondly, by a readiness to deal quickly with any source of smell which may be detected by the local residents."

QUESTION TIME

Cost of Prescriptions

Mr. ARTHUR BLENKINSOP asked the Minister of Health what was the average cost per prescription prescribed under the National Health Service as at the latest available date; and the answer was approximately 6*s.* 4¾*d.* in April, 1958. Was the Minister aware, Mr. BLENKINSOP continued, that the last figure given, at the end of last year, was 4*d.* per prescription less? Was he satisfied that the arrangements made with the drug manufacturers were working properly?—Mr. DEREK WALKER-SMITH replied that he thought they were, but he would continue to keep the matter under review. He was already giving active consideration to the interim report of the Hinchliffe Committee, and he was in consultation about it.

In answer to a supplementary question, Mr. WALKER-SMITH said that an examination of samples in the last year showed that expensive corticosteroid preparations which became available in that year and in 1956 were being increasingly prescribed. It was likely that this trend towards expensive preparations had continued.

Distribution and Recruitment of Nurses

Mr. J. JOHNSON asked the Minister what steps he was taking to ensure that there was an equitable distribution of nurses as between the London teaching hospitals and the smaller provincial hospitals. Mr. WALKER-SMITH replied that the problem of distribution generally was before the National Consultative Council on the Recruitment of Nurses and Midwives, and he would consider it in the light of the advice they gave. Was it not true, Mr. JOHNSON added, that there were large queues and waiting-lists of young nurses for London hospitals? Would it not be possible to devise a voluntary scheme whereby

London teaching hospitals were linked with hospitals like those at Rugby, Nuneaton, and Leicester, so that nurses, perhaps at the beginning or the end of their four years, could spend one year in our provincial hospitals which at the moment were lacking nurses? Teaching hospitals had already been encouraged, said Mr. WALKER-SMITH, to send their student nurses for periods of training to sanatoria and mental hospitals in particular. A compulsory arrangement of the kind suggested would be prejudicial to recruiting.

Mr. E. JOHNSON asked the Minister if he was aware that there was a shortage of nurses in general hospitals; what had been the trend of recruiting during the past five years?—Mr. WALKER-SMITH: While there are shortages in some hospitals, there has been a most satisfactory increase in the total numbers of nursing staff during the past five years.

The numbers of whole-time and part-time nursing staff of various grades in hospitals, other than mental and mental-deficiency hospitals, at Dec. 31, 1952 and at Sept. 30, 1957, were as follows:

	At Dec. 31, 1952	*At Sept. 30, 1957*	*Increase or Decrease*
Trained nurses:			
Whole-time	32,334	36,215	+3881
Part-time	6498	10,238	+3740
Student nurses	44,932	47,128	+2196
Other nursing staff:			
Whole-time	29,183	26,891	−2292
Part-time	10,678	16,591	+5913
Total:			
Whole-time	106,449	110,234	+3785
Part-time	17,176	26,829	+9653

During this period the number of whole-time trained nurses at all hospitals, other than mental and mental-deficiency hospitals, increased by 12% and the number of student nurses by nearly 5%. All classes of whole-time nursing staff together increased by 3·6% and of part-time nursing staff by 56·2%.

Doctors for Colonial Territories

Mr. ARTHUR BLENKINSOP asked the Secretary of State for the Colonies whether he was aware of the shortage of doctors in the Colonial Service; and what steps he was taking to encourage young doctors from Great Britain to take appointments in the West Indies and other Colonial territories.—Mr. J. D. PROFUMO replied: I am well aware of the constant demand for doctors in the medical departments of the overseas territories, which the Minister is doing his best to meet. Vacancies in the West Indies and other territories are advertised in the professional journals as they are notified. In addition, special arrangements have been made to allow applications from young doctors to enter the Colonial Service as an alternative to National Service.—Mr. BLENKINSOP: Will the Minister consider having some consultations with the teaching hospitals to see whether any kind of guarantee can be given to young men entering for temporary service that their chances of promotion in this country are not thereby spoiled?—Mr. PROFUMO: That is something I should like to look at.

Mrs. LENA JEGER: Can the Minister bring this problem more closely before the Minister of Health, who, not long ago, received a report from a committee which suggested that there should be a limitation on the intake of medical students because of the danger of the profession becoming overcrowded?

Malnutrition in East Africa

Mrs. JOYCE BUTLER asked the Minister if he would consider setting up a nutrition department under the auspices of the East African High Commissioner for the purposes of food and food consumption research, diet improvement, and propaganda, and to coordinate the various activities undertaken to counteract malnutrition among children and adults in Uganda, Tanganyika, Kenya, and Zanzibar.—Mr. PROFUMO replied: Coordination of such activities is already the function of the East African Council for Medical Research, under the auspices of the East Africa High Commission services, the East African Institute for Medical Research, and the East African Statistical Department. A big contribution is also being made by the Infantile Malnutrition Research Unit run by the United Kingdom Medical Research Council in Uganda with the cooperation of the local and High Commission authorities.

Obituary

ARNOLD STOTT

K.B.E., M.A., B.Chir. Cantab., F.R.C.P.

Sir Arnold Stott, who died at his home in Surrey on June 15, at the age of 72, was consulting physician to the Westminster Hospital, on whose active staff he had served for over thirty years, during which he made a name as cardiologist and general physician.

Arnold Walmsley Stott was born at Oldham in 1885, and received his early education at Rugby School. From there he went up to Cambridge, where in 1907 he took the natural sciences tripos before going on to St. Bartholomew's Hospital, qualifying M.R.C.S. in 1909. Three years later he gained the M.R.C.P., but it was not until 1917 that he returned to Cambridge to graduate B.CHIR.

After qualifying he held a series of appointments at Bart's and the Royal Chest Hospital; and his association with the latter hospital was maintained throughout his working life. In the 1914–18 war he served in France with the rank of major. After demobilisation he returned to London, and in 1919 he joined the honorary staff of the Westminster Hospital. In 1927 he was elected F.R.C.P. During the 1939–45 war he served, with the rank of major-general, as consulting physician first to the B.E.F. and latterly to Northern Command. He was created K.B.E. in 1946. He retired from the active staff of the Westminster in 1950. At various times he examined for the University of Cambridge, the University of Birmingham, and the Royal College of Physicians of London.

As a colleague and friend, A. A. writes:

To some people, Sir Arnold Stott typified the flâneur. And yet even the least discriminating, inclined to superficial judgment, must have felt puzzled to reconcile this character with a man appointed to the Royal Household, selected as consulting physician to the B.E.F. on the outbreak of the world war, whose services were appreciated by promotion to major-general and the award of a K.B.E. The fact was that a façade of apathy and apparent indifference concealed exceptional ability.

He passed all his examinations with ease whilst displaying no interest in prizes or academic distinctions. So far from taking an M.D., he did not present the comparatively trivial thesis which at that time was a requirement for the Cambridge M.B. He was satisfied with the qualification essential for a staff appointment. Although particularly identified with cardiology, he was a general physician in the best sense of the term. The product of a worthy apprenticeship in the pathological department at St. Bartholomew's, without aspiring to brilliant diagnoses in obscure conditions, with shrewd judgment and stability in fundamentals, his opinion was always of value. For, apart from his training, he had an exceptional clinical instinct. He seldom participated at medical meetings and wrote but little. Yet these rare occasions exhibited in no small degree a gift of expression through the tongue and by the pen that others envied whilst deploring his reluctance to apply himself in proportion to his ability. Indeed ability was evident in all his undertakings: whether administration in a medical school; the organisation of an Army's medical services; or the management of a dining club.

He had a remarkable capacity to stimulate and to interest without any appearance of effort. More than once this was

evident in the cause of charity—for example, to assist the dependants of one who had been unfortunate. Himself indefatigable, he insisted that everybody else should be equally untiring. Loyalty was the keynote of his character: loyalty to his school, his university, his hospitals, his Lodge; and, whilst a good hater, friendship was to him a sacred trust. He fearlessly expressed his opinion in the interests of truth and justice regardless of personal consequences, through antagonising those who might adversely influence his career.

I recall an episode fully thirty-five years ago when we were the two juniors on the staff of a famous special hospital. The staff had been summoned to be addressed by an arrogant self-opinionated chairman of the hospital who had a proposition of a revolutionary character that threatened to undermine professional liberty. At the conclusion he said, " And now I'll leave you gentlemen to talk it over: I don't wish to convince you against your will ". Dead silence ensued; not a word from the seniors, men of eminence. Dead silence: and then Arnold Stott in a quiet clear voice, " If you won't mind my saying so, I don't think you're particularly anxious to convince anybody about anything ". Courteous—but devastating!

Never robust, Arnold suffered frequently from attacks of bronchial infection. His last few years were clouded by almost complete disablement endured with great courage and a determination that repeatedly confounded dogmatic prognosis.

He married in 1911 Lily, daughter of Alfred Robert Holland. There were a son and two daughters of the marriage.

JOHN LAMBERT

O.B.E., M.A., M.D. Cantab., D.P.H.

Dr. John Lambert, who, as medical officer to Wellington College for over a quarter of a century, became well known for his work in school medicine, died at Crowthorne, Berkshire, on June 16, at the age of 78.

He was brought up in Cambridge, and from the Perse School he went on to the university. In 1901 he obtained first-class honours in the natural sciences tripos before going to the London Hospital, from which he qualified M.B. in 1904. He held a clinical assistantship at the Hospital for Sick Children, Great Ormond Street, and later joined the Brighton Education Committee, to which he became senior school medical officer. From Brighton he went to Lancing College as resident medical officer. In 1909 he graduated M.D. During the 1914–18 war he served as a surgeon lieutenant in the Royal Navy, and for his services he was appointed O.B.E. From 1919 until 1946 he was medical officer to Wellington College, Berkshire, and to preparatory schools in the neighbourhood, at first combining the duties of medical officer and of housemaster of a waiting house.

Dr. Lambert is survived by his second wife, formerly Miss Vera Pledger.

A colleague writes:

When John Lambert applied for the post at Wellington College, he impressed Dr. W. W. Vaughan, then headmaster of Wellington and later of Rugby, who stands out as a judge of character, for about a score of men of his choice became headmasters of famous public schools. Lambert justified Vaughan's selection. He was noted at Wellington for accurate diagnosis, friendliness, sound advice, and imperturbability in a crisis. Soon after his arrival, he introduced an X-ray apparatus for routine use in the sanatorium, but generally he was not keen on introducing every new method.

Lambert wrote little but was proud that his predecessor, H. G. Armstrong, had been the first to describe the descent of the testicle at puberty. His own article on torsion of the testicle showed what detailed notes he kept of his patients, and his successor found his medical records of great help.

He was the most ardent attender of meetings of the Medical Officers of Schools Association, and both in council and at the general meetings spoke from his own experience and often brought an air of sanity to a discussion. He was hon. secretary from 1925 until 1936 and thereafter president until 1938. He was editor of the *Annual Proceedings* until 1947. Even after his retirement from Wellington he continued to attend very regularly.

In his early days he played cricket and golf, and he was always a most enthusiastic and successful gardener.

HENRY MANNING PEREIRA

L.R.C.P.E., D.P.H.

Dr. Pereira, who died on June 11 at the age of 87, was one of that famous medical team who worked under T. F. Ricketts in the Hospital Ships and River Ambulance Service during the smallpox epidemic of 1900–02. Thereafter he never ceased to practise, and to preach, that great master's teaching on the diagnosis and the hospital management of smallpox.

Because of his characteristic modesty, to the medical world at large Pereira was probably the least well-known member of that team; but those of us who worked under him learned more about smallpox from him than from any other source; and his value, especially to medical officers of health, as a consultant—a real smallpox expert of the Ricketts school—was, of course, outstanding and almost unique.

In addition to his smallpox experience Pereira possessed an exceptional knowledge of diphtheria, enteric fever, and the old type of scarlet fever, gained from years of work in the fever hospitals of the Metropolitan Asylums Board; and when the London County Council took over those hospitals in 1930 he was appointed medical superintendent of the Eastern Hospital at Homerton, where he remained until his retirement.

Pereira was a most lovable man, supremely happy in his family life. There are many of us who will treasure the memory of his friendship.

J. P. M.

PETER PAUL DEBONO

O.B.E., M.D. Malta, F.R.C.S., D.P.H.

Prof. P. P. Debono, who died on June 3 at the age of 67, held the chair of surgery in Malta for twenty-five years, during which by practice and teaching, often in difficult circumstances, he did much to enhance the standard of surgery in the island.

After graduating in 1910, Professor Debono worked for a year in London. Returning to Malta he first took a teaching appointment in pathology and anatomy; and in the 1914–18 war he was associated as pathologist with the Royal Naval Medical Service and the R.A.M.C. After the war he turned to surgery, and in 1919–22 he did postgraduate work in England, first at St. Bartholomew's Hospital, London, and latterly in Manchester, obtaining the F.R.C.S. in 1920. In 1926 he was appointed professor of surgery and senior surgeon of the Central Hospital, Malta. In 1944 he became chief surgeon of the Emergency Medical Services of Malta. He retired from the chair in 1951 but continued to practise until his death. In 1936–39 he had served as a nominated member of the Executive Council of Malta; and in 1947 he was elected a member of the Legislative Assembly, of which he was subsequently appointed Speaker, and served as Minister of Health.

Professor Debono married Miss L. Briffa in 1918, and there were two daughters of the marriage.

J. H. S. writes:

I first met P. P. Debono early in1943. He was still professor of surgery in Malta and working under conditions such as can never have been experienced by any senior clinical teacher before or since. His " hospital " was in a requisitioned building in Hamrun a few miles outside Valletta, and it was an unsuitable place for the care of patients and particularly for those requiring surgical treatment. There were other difficulties too. The shortage of food and, still more, the lack of soap were the cause of skin infections that became epidemic. In the place where I

worked with one of his equally talented brothers, Prof. Joseph Debono, the unfinished St. Luke's Hospital, over three-quarters of the children admitted during the poliomyelitis epidemic had scabies or impetigo or both. This sort of thing was enough to daunt the most ardent surgeon. But Peter Paul plugged away with indomitable courage not only as a surgeon but as a teacher. The men he turned out were extremely good. Perhaps they were above average, but they may have gained something from having to work under such grim conditions. Debono was a true general surgeon, one of the last to deserve the title, and his versatility was astonishing. Nevertheless, he realised that specialisation was becoming necessary, and we talked for hours together about future developments in Malta. It was not easy convincing him, but when he finally conceded a point, perhaps grudgingly, there was no going back and one could then count on his help.

The Maltese Islands hold an honourable place in the history of European medicine and they have turned out men of distinction, some now working in distant parts of the Commonwealth. The little medical school, shockingly housed and always short of money, is part of a university founded at the end of the sixteenth century. It is easy to criticise its shortcomings; but our Maltese colleagues are even more acutely aware of them and they point out, not unreasonably, that the Government is directly responsible for the University. What should not be forgotten is that men of the calibre of the Debono brothers are but three of its many notable alumni.

ERNEST KEITH WESTLAKE

M.A., M.D. Cantab., M.R.C.P.

Dr. E. K. Westlake, a senior medical registrar at the Middlesex Hospital, who died in London last week at the age of 33, had done valuable work on chronic bronchitis and emphysema.

T. S., who was a senior colleague of Dr. Westlake when he worked at Chase Farm Hospital, Enfield, writes:

After a distinguished academic record and house-physicianship at the Middlesex Hospital, Keith Westlake became my house-physician in 1951 and later my registrar. Between these two appointments he worked at the Brompton Hospital, first as a house-physician and then as a research assistant in the department of respiratory physiology. Later he was registrar at the Hammersmith Hospital and senior registrar at the Middlesex Hospital. He made many contributions to the literature on aspects of chronic bronchitis and emphysema, and whilst with me he passed his M.R.C.P. examination and completed his M.D. thesis, entitled "Disordered Respiratory Function and Carbon Dioxide Narcosis in Emphysema", for which he was awarded the Raymond Horton-Smith prize in 1952–53. This thesis is typical of him and his work; every page reflects his thoroughness and brilliant clear thinking.

He was a quiet reserved man, at times moody, difficult to know well and not given to fine speeches, and it was only on closer acquaintance that one appreciated his fine character, determination, and absolute honesty—this last was the most striking of his characteristics. He had a most original and critical mind and a prodigious capacity for work. He paid great attention to detail and nothing escaped his keen eye. His notes were a model of accurate observation and detail—he left nothing to memory. Everything had to be just right, and all doubtful observations or measurements were discarded. Once his mind was set on an objective nothing would deflect him from it, and this caused people to think that he was hard—which he was not. Although his approach might be called robust, beneath it all he was very sensitive and afraid of hurting people's feelings.

It was a pleasure and privilege to work with him. The whole hospital staff, nursing and medical alike, were fond of him and admired him for his hard work. Since he left this hospital he has often been referred to affectionately by the outpatients.

Dr. Westlake is survived by his wife and two daughters.

BERNARD SUTRO OPPENHEIMER

A.B. Harvard, M.D. Columbia

Dr. Bernard Oppenheimer, formerly chief of the medical divisions of the Mount Sinai Hospital and the Montefiore Hospital in New York, who died on June 10 at the age of 81, will be remembered by the many British postgraduate students whom he welcomed to his home. One of them, D. G. J., writes:

Dr. Oppenheimer combined the qualities of an inquisitive clinical research-worker, a physician with clinical acumen, and a hospitable Anglophile. He was associated with the Mount Sinai Hospital for over fifty years as physician, medical service chief, teacher, and scientist, and in 1915 he was responsible for the installation of the first cardiographic laboratory there. His contribution to cardiovascular problems would be enough for any single lifetime, but typical of his drive and thirst for scientific knowedge was the way in which his retirement was deferred by the initiation of a large and continuing project on the carcinogenic properties of plastics. His wife, Dr. Enid Oppenheimer, an English physiologist, was his close collaborator in this programme. Their weekend country home was always open to overseas postgraduates, who were encouraged, between sets of tennis, to discuss their research and clinical problems in medicine. It was a poor man who came away without some new research idea, a fresh outlook on clinical medicine, and a distinct improvement in his tennis.

Diary of the Week

JUNE 29 TO JULY 5

Monday, 30th

UNIVERSITY COLLEGE, Gower Street, W.C.1
5 P.M. Dr. J. D. Robertson: Molecular Biology of Cell Membranes.
POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12
4 P.M. Dr. J. F. Goodwin: Combined Valvular Disease.
LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Keppel Street, W.C.1
5 P.M. Prof. Isidor Greenwald (New York): The History of Endemic Goitre: Its Significance for the Ætiology of the Disease.

Wednesday, 2nd

UNIVERSITY OF LONDON
4.30 P.M. (London Hospital Medical College, Turner Street, E.1.) Prof. T. Hale Ham (Cleveland): Hæmolytic Anæmia.
POSTGRADUATE MEDICAL SCHOOL
2 P.M. Dr. Forrest Fulton: Tissue Culture for the Diagnosis of Virus Infections.
INSTITUTE OF DISEASES OF THE CHEST, Brompton, S.W.3
5 P.M. Dr. R. V. Gibson: Atrial Septal Defects.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, W.C.1
5.30 P.M. Dr. E. A. Muguerza (Madrid): Carcinoma of the Epiglottis.
MEDICAL RESEARCH COUNCIL
5 P.M. (National Institute for Medical Research, Mill Hill, N.W.7.) Prof. Samuel Graff (New York): Experiments with Continuous Metazoan Cell Cultures.

Thursday, 3rd

INSTITUTE OF NEUROLOGY, The National Hospital, Queen Square, W.C.1.
5.30 P.M. Dr. G. Melvill Jones: Orientation in Flight.
INSTITUTE OF CHILD HEALTH, Great Ormond Street, W.C.1
5 P.M. Sir Macfarlane Burnet (Melbourne): Immunological Aspects of Early Life.

Appointments

BRUN, FRANK, M.B. Lond., F.F.A. R.C.S.: consultant anæsthetist, Sunderland group of hospitals.
FORBES, R. Y., L.R.C.P.E., D.P.H.: deputy M.O.H., Slough, and assistant M.O. and school M.O., Buckinghamshire.
HUGHES, E. M., M.B. Lpool, D.P.H.: deputy M.O.H., Nuneaton, Bedworth, and Atherstone.
REDWOOD, C. R. M., F.R.C.S.: part-time consultant general surgeon, Doncaster Royal Infirmary.
SOUTH, CYRIL, M.B. Sheff., F.R.C.S.: part-time consultant surgeon, St. Chad's Hospital, Birmingham.
SYROP, SARA, MED. DIPL. Warsaw, D.T.M. & H., D.C.H., D.P.H.: M.O., West Ham.

Colonial Appointments:

BILLINGTON, V. L., M.B. Cantab.: M.O., Tanganyika.
CHATTERTON, J. J., M.R.C.S.: M.O., Cyprus.
IRANI, S. J., M.D. Bombay, F.R.F.P.S.: M.O., British Guiana.
MOYES, R. W., M.B. Lond.: M.O., Kenya.
ROGERS, VINCENT, M.B. Lpool, D.M.R.D.: M.O., Sarawak.
SEN, S. K., M.B. Calcutta, D.P.H.: M.O., Trinidad.
SIMONS, H. R., M.B. Lond.: M.O., South Pacific health service, Fiji.
TOLLEY, MARY A. T., M.B. N.Z., M.R.C.O.G.: M.O. (special grade), Uganda.

Notes and News

MEDICINE IN CHINA

AT the annual general meeting of the Royal Society of Tropical Medicine and Hygiene on June 19, Prof. A. W. Woodruff gave some of his impressions of medicine in China, derived from his visit last year with a group of British doctors.

Setting the scene historically, he said that the traditional Chinese philosophy had hitherto been one of respect for antiquity and rejection of change, but politically the last century had been marked by corruption, civil war, widespread poverty, and foreign invasions. In 1948, the change of regime brought a revolution of ideas, as well as the massive political revolution, which completely reversed the ancient conceptions and trends. The industrial revolution was initiated and had been accepted with fervour. Part of the Government plan was a comprehensive medical scheme which, though not yet completed, was the eventual goal. But China had fewer qualified doctors than Britain, for a population more than ten times as great, though in rural areas there were large numbers of traditional practitioners sometimes skilled in the use of herbal remedies and full of the kind of unscientific mysterious authority so often found among medicine men in backward countries. The authorities made use of these men, gave them some form of instruction in scientific medicine whenever possible, and, instead of antagonising them, drew them into the general organisation. But their day would end, and the output of fully trained medical graduates from the 32 colleges which now give five-year courses (soon, it was hoped, to be made six-year courses) would gradually provide the required numbers. The standard in these colleges was high, though to British observers the time spent in studying dialectical materialism seemed excessive.

Postgraduate medical education was conducted at the great Peking Medical College, and here again the standard was high. There were various research institutes in Peking, Shanghai, and other places, and the subjects for research included epidemic diseases, industrial diseases, public health, traditional medicine, and specific Chinese problems. At Shanghai the enormous problems of *Schistosoma japonicum* infection (11 million people were affected, most of them in the Yangtse valley) were being tackled. This disease was taken so seriously, and the treatment and control measures were on so large a scale, that Professor Woodruff thought that it would be overcome more quickly than in other countries where it was endemic.

In Chinese cities there were now few dogs and few flies, and it was the mark of a good citizen to be diligent in destroying both; it was therefore equally the mark of a bad citizen to be indifferent, and a bad citizen might have a bad time. The streets and the people were clean; and cleanliness, order, and health were popular. The former poverty had largely passed away, partly because the Government gave incentives to production, and the old stranglehold of the moneylender had gone. The Government had established the rule of law, stabilised the currency, and started great schemes of reconstruction and industrialisation which would increase wealth and which were popular: they were needed for a population growing at a fantastic rate.

The price exacted from the people for these undoubted material rewards was conformity, and this was now given with enthusiasm. China might soon be the most powerful nation in the world, and we might hope that the traditional Chinese talent for compromise would lead to a system more tolerant than that of Russia. China might look to the West if the inducement was strong enough. One way in which the West could encourage such a tendency would be by offering training here for young Chinese graduates in the methods and ideals which we found acceptable. Professor Woodruff's message was that Europe and the West should make a vital constructive effort of friendship towards this serious, progressive, and rapidly developing people, for whom we have always had warm regard.

INADEQUATE DIETS IN PREGNANCY

LAST year there was a noticeable deterioration in the diets of many women, according to Miss Helen Simpson, dietitian to the Simpson Memorial Maternity Pavilion of Edinburgh Royal Infirmary. Miss Simpson, in her report on 1957, says that the deterioration was due chiefly to the slightly increased cost of living and to the higher incidence of unemployment. In some cases, although the income appeared to be adequate, hire-purchase commitments upset the balance of the budget. Protein foods, being the most expensive, were reduced, and more carbohydrate was eaten to satisfy the appetite. The special pint of milk provided at half price for a pregnant woman was often shared with the family. Less fruit and vegetables were bought when less money was available. The result of this was evident in the increasing number of young women found to be anæmic. Many women who were apparently in good health at the beginning of pregnancy quickly became anæmic later. In addition to iron therapy, dietary investigation and advice were helpful in these cases.

NATIONAL ASSISTANCE BOARD

THE report [1] of the Board for 1957 shows that the number of weekly allowances rose during the year by 56,000 to 1,712,000 (covering the needs of nearly $2^1/_2$ million people). The cost of assistance was £112,200,000. Nearly three-quarters of the 1,712,000 allowances went to supplement national insurance benefits, including 978,000 to supplement retirement pensions and 118,000 to supplement sickness benefit or industrial-injury payments. Nearly $1^1/_4$ million of the people receiving allowances were over pensionable age.

Between October, 1956, and the end of March, 1957, about 21,000 people from Hungary sought refuge in this country; and at the peak of activity the voluntary organisations, which undertook the task of receiving them, were using well over a hundred establishments to house them. About 5500 emigrated, mainly to Canada, and others were quickly settled in work and found private accommodation. But many still needed room—and often free maintenance—in hostels, and when the money available from a fund raised by the Lord Mayor of London was exhausted the cost of running the hostels was borne by the Exchequer, and the Board took over administration from the British Council for Aid to Refugees on Oct. 1. At that date there remained twelve hostels with 1814 residents; by the end of 1957 two more hostels had been closed and the number of residents reduced to 1427. The net cost to the Board for the three months was about £44,000.

BILLY GOES TO HOSPITAL

THIS lively coloured picture-book which the departments of child health and medical illustration of Guy's Hospital have combined to produce should do much to reassure any small patient-to-be. In appearance it is cleverly reminiscent of one of the pleasanter weekly comics, and it is full of the everyday details which children enjoy. A five-year-old who has studied it on his mother's knee will find a hospital ward welcoming and familiar instead of strange and alarming. The enclosed leaflet for parents offers sensible advice about preparing a child for his stay in hospital and explains his special need for visits, small gifts, and postcards while he is there, and for extra affection and care when he returns home.

On another page of this issue Prof. R. S. Illingworth mentions some of the hospitals which have already prepared booklets of this kind for their young entrants, and he asks for more. Guy's booklet certainly gives his appeal a flying start.

AN ATTRACTIVE SANATORIUM

TUBERCULOSIS is more than a disease: it is a philosophy. And, like other philosophies, it has its distinctive bibliography (*The Magic Mountain* and *The Plague and I* are two examples). The author of a new novel,[2] *At Doctor Mac's*, may have more in common with Betty McDonald than Thomas Mann, but he has nevertheless made a notable addition to this series.

1. Cmnd. 444. H.M. Stationery Office. 3*s*.
2. At Doctor Mac's. By PETER QUINCE. London: J. M. Dent. 1958. Pp. 277. 15*s*.

Doctor Mac's is a private sanatorium, maintained by a kindly physician whose only interests in life are tuberculosis and music. His establishment may be run along unconventional lines, but it accomplishes the cure of some difficult cases—patients with emotional as well as physical disturbances. Though there is no Peter Quince in *The Medical Directory*, the book has an authentic ring, and its readers will not be surprised to learn that the author has practised both as psychiatrist and chest physician.

Doctors, of course, are far from enjoying professional immunity to tuberculosis (Laennec and Withering, Trudeau and Ehrlich, were all constrained to take more than an objective interest in the disease). And every doctor will say to himself, when he has finished this book, "If ever I have to go to a sanatorium, let it be one like Doctor Mac's!"

FILMS ON CARDIAC ARREST AND MASSAGE

SOMETIMES in sudden cardiac arrest transthoracic cardiac massage is either not carried out or postponed while less effective procedures are tried, owing to hesitation to enter the chest, coupled with lack of preparation for such an emergency.

A film on *Respiratory and Cardiac Arrest* (16 mm., sound, black-and-white, 15 min., 1945) [1] was made by Dr. Geoffrey Organe and Dr. I. W. Magill at Westminster Hospital. Though much of the film is still accurate, details of the procedure have since been changed.

Dr. Claud S. Beck has made several films on the subject; his most recent one, *Resuscitation for Cardiac Arrest* (16 mm., sound, colour, 18 min., 1956),[2] is the best at present available.

Dr. Beck, who delivers a filmed lecture, divides his objectives into restoration of the oxygen system and re-establishment of the heart-beat. The emergency lasts until the first has been achieved; and time should not be wasted listening for heart-sounds, taking an electrocardiogram, injecting adrenaline, dilating the anal sphincter, and so on. The routine should consist of oxygenation through an endotracheal tube and direct cardiac massage through a submammary incision. The second stage can be more leisurely. The method of performing cardiac massage is demonstrated on a dog's heart, and a series of pressure tracings show the efficacy of different grasps on the heart and the importance of allowing adequate filling between each compression.

A short film on *Cardiac Massage* (16 mm., mute, colour, 2 min., 1956),[3] was made by Mr. B. B. Milstein at the Brompton Hospital, London. This is primarily a demonstration of the surgical approach to the heart, and the method of cardiac massage with the pericardium intact, through an incision in the pericardium and finally by bimanual compression of the heart. It was made to illustrate a lecture on the subject and is thus less complete than the other films.

A new film, *Cardiac Arrest* (16 mm., sound, colour, 17 min., 1958) [1] by Dr. John Beard was shown at a recent meeting of the Faculty of Anæsthetists at the Royal College of Surgeons of England.

It opens with a lecture by Dr. Beard on the role of anoxæmia in cardiac arrest. A man is then seen to collapse in an outpatient department. The technique of cardiac massage is demonstrated on a rubber heart, and the difference between arrest and ventricular fibrillation is shown on an electrocardiogram. The patient is given oxygen from an anæsthetic machine, and, since the carotid pulsation is absent and the pupils are dilated, a pharyngeal airway is inserted.

An attendant takes over the positive-pressure respiration while the doctor incises the chest in the fourth left interspace, spreads the ribs, and applies cardiac massage. On the arrival of the surgeon, the first doctor returns to the head of the table and inserts an endotracheal tube. The second half of the film is devoted to a discussion on methods of restoring the heart-beat. Finally, mention is made of the intravenous injection of 50% sucrose solution if recovery is delayed.

Royal College of Physicians of Edinburgh

The William Cullen prize, awarded by the college every four years " for the greatest benefit done to practical medicine ", has been awarded to Dr. W. Melville Arnott, professor of medicine in the University of Birmingham.

1. Available free from I.C.I. Film Library, Imperial Chemical House, Millbank, London, S.W.1.
2. Available free from E. R. Squibb & Sons, 17/18, Old Bond Street, London, W.1.
3. Available free from Mr. B. B. Milstein, F.R.C.S., Brompton Hospital, London, S.W.3.

University of Bristol

At recent examinations the following were successful:

M.D.—H. M. Leather, Henry Urich.

M.B., Ch.B.—R. T. Marcus, Michael Nicholas, R. A. Sharpe (second-class honours); R. A. R. Abraham, Daphne M. Allen, Sarah M. Brewer, Barbara A. Brooking, John Brunning, R. A. Bunting, J. B. Burchill, Mervyn Busson, Joan R. Coombs, T. O. Dada, Philip Dent, S. V. C. Egonu, C. C. Entwistle, P. T. Gardner, R. A. G. Huish, G. H. Hulands, F. W. Lewis, Susi G. Leyton, Alison J. McConnell, Yvonne E. J. Marot, B. S. Milner, C. D. Murphy, V. P. Nagpal, E. O. Olurin, Glenys R. Packer, M. LeM. Parker, M. P. Patel, A. P. C. H. Roome, M. H. Seymour, F. D. Skerrett, J. M. Slater, Ivor Surveyor, Lip Hing Thean, Umathevan Viswalingam, J. T. Ward, Juliet M. Whitehead, Mary G. Wilmot.

University of Edinburgh

The following appointments have been made:

Mr. J. J. Mason Brown, reader in pædiatric surgery; Dr. R. H. Girdwood, reader in medicine; Mr. G. D. Matthew, reader in obstetrics and gynæcology; Dr. W. N. Morley, assistant in medicine; Dr. R. S. Nagle, lecturer in pathology.

University of St. Andrews

Dr. R. E. Coupland has been appointed to the Cox chair of anatomy in succession to Prof. D. Rutherford Dow, who retires on Sept. 30. The department is in Queen's College, Dundee, and Dr. Coupland will be a member of that college.

Dr. Coupland graduated M.B. with honours at Leeds in 1947, thereafter gaining the M.D. in 1952 and the PH.D. in 1954. Following a house appointment in surgery at Leeds General Infirmary, Dr. Coupland acted as demonstrator in anatomy at the university; and, after National Service with the R.A.F., he returned to Leeds in 1950 as lecturer—the appointment which he holds at present. He spent a period during 1955–56 in the department of anatomy, University of Minnesota, as assistant professor. For some years Dr. Coupland has been interested in research into adrenal function and specially the distribution and function of chromaffin tissue. He has also worked on the transplantation of endocrine organs and on the histochemistry of the autonomic nervous system. He will take up his appointment on Oct. 1.

University of Dublin

At a recent examination the following were awarded the diploma in gynæcology and obstetrics:

F. C. Das, Gauri Deb, Azima Iqbal Qureshi, Sarah Ramachandran, I. Ravchaudhuri, S. Sarkar.

European Society of Hæmatology

This society will hold a congress in Bedford College, Regent's Park, London, N.W.1, from Sept. 7 to 12, 1959. It will be organised by the British section of the society under the presidency of Dr. J. F. Wilkinson. Further particulars may be had from the secretary, Dr. Ernst Neumark, department of pathology, St. Mary's Hospital, W.2.

W.H.O. Executive Board

The Executive Board of the World Health Organisation met in Minneapolis, Minnesota, on June 16 and 17, under the chairmanship of Dr. Percy Moore (Canada). The Board established a special account to deal with gifts of smallpox vaccine offered by governments to assist in a smallpox eradication campaign. The Board established a committee to be available for consultation with W.H.O.'s director-general in his further negotiations with the International Atomic Energy Agency with a view to concluding an agreement between the two agencies.

From July 1, under the National Health Service Contributions Act, 1958, the weekly contribution for the National Health Service will be increased by 6*d.* for men, 4*d.* for women, and 2*d.* for juveniles, with an additional 2*d.* from the employer in the case of employed persons. The new combined weekly rates of National Insurance and National Health Service contributions are set out in leaflet N.I.103, obtainable at Pensions and National Insurance offices.

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Births, Marriages, and Deaths

DEATHS

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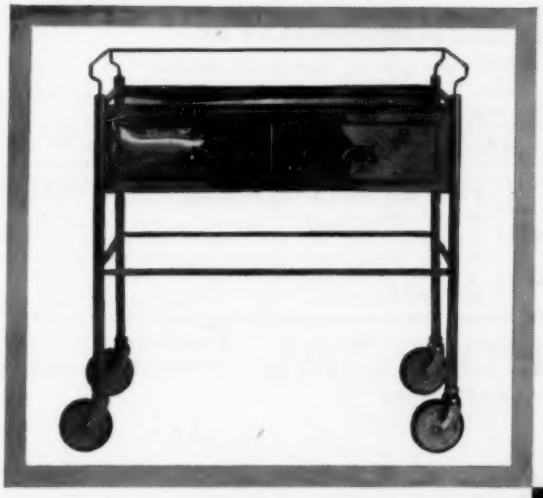

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MOULTON PARK. Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL. The seaside home of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

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The Terms and Conditions of Service of Hospital Medical and Dental Staff apply to all N.H.S. hospital posts we advertise, unless otherwise stated. Canvassing disqualifies, but candidates may normally visit the hospital by appointment.

Academic and Educational

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Sir LINDOR BROWN, C.B.E., F.R.C.P., F.R.S., will deliver the BERTRAM LOUIS ABRAHAMS LECTURE on TUESDAY, 8TH JULY, 1958, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject: "The Mode of Action of Sympathetic Nerves."

Any member of the Medical Profession admitted on presentation of doctor's card.

By order of the President.

HAROLD BOLDERO, Registrar.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

PETER BRIAN MEDAWAR, C.B.E., D.SC., F.R.S., will deliver the F. E. WILLIAMS LECTURE on THURSDAY, 10TH JULY, 1958, at 5 P.M. at the College, Pall Mall East, S.W.1.

Subject: "The Biology of Ageing."

Any member of the Medical Profession admitted on presentation of doctor's card.

By order of the President.

HAROLD BOLDERO, Registrar.

ROYAL COLLEGE OF SURGEONS OF ENGLAND
and
ROYAL COLLEGE OF PHYSICIANS OF LONDON

MACKENZIE MACKINNON RESEARCH FELLOWSHIP

Applications are invited for Fellowships for research in medicine or surgery. The Fellowships may be in the form of grants to assist research and may be whole- or part-time.

Candidates must hold a medical qualification registrable in this country or a University degree.

The honorarium will be at the discretion of the joint Committee, and will be £1200 p.a. whole-time or not less than £500 part-time according to experience and the amount of time available for research. Superannuation arrangements, if already in force, may be continued.

A grant for expenses may be paid to the institution where the research is carried out.

Applications must be submitted through a medical school. Further particulars and application forms may be obtained from the Assistant Secretary, Royal College of Surgeons, Lincoln's Inn-fields, London, W.C.2. The closing date for applications is 14th September, 1958. KENNEDY CASSELS, Secretary.

SOCIETY OF APOTHECARIES OF LONDON

DIPLOMA IN INDUSTRIAL HEALTH

The next Examination will begin on MONDAY, 14TH JULY, 1958. The following Examination will be held in DECEMBER, 1958.

For Regulations apply Registrar, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

UNIVERSITY OF LONDON

A LECTURE entitled "Veno-Occlusive Disease of the Liver" will be delivered by Professor GERRIT BRAS (West Indies) at 5 P.M. on 7TH JULY at St. Mary's Hospital Medical School (Wright-Fleming Institute Lecture Theatre), Norfolk-place, W.2. Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF LONDON

A LECTURE entitled "Haemolytic Anaemia" will be delivered by Professor T. HALE HAM (Western Reserve University) at 4.30 P.M. on 2ND JULY at the London Hospital Medical College (Bearstead Lecture Theatre), Turner-street, E.1. Admission free, without ticket.

JAMES HENDERSON, Academic Registrar.

UNIVERSITY OF LONDON

BRITISH POSTGRADUATE MEDICAL FEDERATION
INSTITUTE OF NEUROLOGY
(Queen-square)

2 COURSES OF CLINICAL DEMONSTRATIONS open to Postgraduates will be held at The National Hospital, Queen-square, on WEDNESDAYS at 4.15 P.M. from 9TH JULY to 24TH SEPTEMBER, 1958, inclusive, and on SATURDAYS at 10.30 A.M. from 12TH JULY to 27TH SEPTEMBER, 1958, inclusive.

The fee for attending either of these courses is 2 guineas.

Application for a ticket should be made to The Dean, Institute of Neurology, The National Hospital, Queen-square, W.C.1, and a remittance to cover the fee enclosed. Only postal applications will be considered.

THE ROYAL MEDICAL FOUNDATION OF EPSOM COLLEGE

The ANNUAL GENERAL MEETING of the Governors will be held on WEDNESDAY, 16TH JULY, 1958, at 3.30 P.M., in the Council Room of the Medical Defence Union, on the third floor of Tavistock House South, Entrance D, Tavistock-square, London, W.C.1.

In addition to ordinary business the agenda will include the filling of the 10 annual vacancies on the Council, for which the following Governors are recommended by the Council:—

Major-General A. E. Campbell, Mr. D. S. Clogg, Dr. R. Cove-Smith, Mr. J. Chuter Ede, Mr. J. N. Eggar, Brigadier H. Ll. Glyn Hughes, Mr. J. Kirwan-Taylor, Air Marshal Sir Patrick Lee-Potter, Mrs. N. H. Nicholls, Mr. K. C. Turpin.

By order of the Council,

A. Y. CANN, Secretary.

THE UNIVERSITY OF LEEDS

DIPLOMA IN PSYCHOLOGICAL MEDICINE

A COURSE for the Diploma in Psychological Medicine will commence in OCTOBER, 1958, if sufficient entries are received. Instruction will be part-time and will occupy approximately 1½ days a week during 9 academic terms (3 years).

Further particulars may be obtained from the Secretary, School of Medicine, Thoresby-place, Leeds, 2, to whom application for admission to the course should be sent as soon as possible.

THE MIDDLESEX HOSPITAL MEDICAL SCHOOL
London, W.1

THE COMFORT CROOKSHANK AWARD FOR CANCER RESEARCH

The late Miss BESSIE C. CROOKSHANK, by gifts of money to The Middlesex Hospital Medical School, created a Fund known as "The Comfort Crookshank Award for Cancer Research", the interest to be used triennially to award a Prize to someone who had made valuable contributions to Cancer Research.

The Council of the Middlesex Hospital Medical School has made the third award, that for 1957, to Professor CHARLES HUGGINS, Professor of Surgery at the University of Chicago, The United States of America.

Professor Huggins has accepted the Award, and an invitation to deliver a Lecture at the Middlesex Hospital Medical School at 3.30 P.M. on THURSDAY, 3RD JULY, in the Clinical Lecture Theatre on the first floor crosspiece of the Hospital. The title of his Lecture will be "Cancer of the Prostate".

Medical practitioners wishing to attend are requested to apply for tickets to the School Secretary, The Middlesex Hospital, London, W.1.

THE FIRST CATHERINE CHISHOLM MEMORIAL LECTURE

Will be delivered by Professor ARVID WALLGREEN.

Subject: "A Lifetime of Paediatrics."

MONDAY, 30TH JUNE, 1958, at 5.30 P.M. in The Clinical Science Building, York-place, Manchester, 13.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON). Applications are invited for the post of LECTURER (MEDICAL) IN HISTOPATHOLOGY from medical graduates with some experience in medical laboratory work. Salary scale £1150–£1750, with children's allowances and F.S.S.U. benefits.

Applications, including the names of referees, should reach The Secretary, Department of Pathology (from whom further particulars can be obtained), by 1st August, 1958.

THE ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE invites applications for the post of INDUSTRIAL HYGIENIST to the Laboratories of the Institute, 23, Queen-square, London, W.C.1. Starting salary not less than £1500 p.a.

Applications, stating age, qualifications and experience, to the Secretary, 28, Portland-place, W.1, not later than 31st July, 1958. Further particulars may be obtained from the Secretary.

UNIVERSITY OF BIRMINGHAM. Department of PAEDIATRICS AND CHILD HEALTH. Applications are invited for the post of RESEARCH FELLOW in the above-mentioned Department, vacant on 1st September, 1958. The salary will be in the range £700–£1000 a year. The person appointed will be expected to engage in research in paediatrics and to assist in clinical work and undergraduate teaching.

Applications, giving details of experience and the names of 2 referees, should be sent not later than 9th July, 1958, to the Assistant Registrar, The Medical School, Birmingham, 15, from whom further particulars may be obtained.

UNIVERSITY OF BIRMINGHAM. Faculty of Medicine. Applications are invited for the post of whole-time LECTURER IN PATHOLOGY (Clinical). Duties to include teaching and participation in surgical histology and necropsy services of the United Birmingham Hospitals. Ample opportunities exist for research, including experimental cancer research. The successful candidate will be required to begin duties on 1st October, 1958. Salary range £900–£1950 (plus F.S.S.U. and family allowance), depending on age, experience and qualifications.

Applications (9 copies), together with the names of 3 referees, should be sent not later than 18th July, 1958, to the Assistant Registrar, The Medical School, Birmingham, 15, from whom further particulars may be obtained.

THE UNIVERSITY OF LIVERPOOL. Department of STUDIES IN PSYCHOLOGICAL MEDICINE. Applications are invited for the post of RESEARCH ASSISTANT IN PSYCHOLOGICAL MEDICINE at a salary within the range £1000–£1300 p.a., according to qualifications and experience. The appointment will be tenable for 1 year and may be renewed for a second year.

Applications, stating age, academic qualifications and experience, together with the names of 3 referees, should be received not later than 19th July, 1958, by the Registrar, from whom further particulars of the conditions of appointment may be obtained.

THE UNIVERSITY OF MANCHESTER. Applications are invited for a full-time post as SENIOR LECTURER IN CHEMICAL PATHOLOGY. Candidates must be medically qualified and should have special qualifications in chemical pathology. Salary on a scale rising to £2400 p.a. Initial salary according to qualifications and experience. Membership of the F.S.S.U. and children's allowance scheme.

Applications should be sent not later than 5th July, 1958, to the Registrar, the University, Manchester, 13, from whom further particulars and forms of application may be obtained.

THE UNIVERSITY OF SHEFFIELD. Applications are invited for the appointment of a medically qualified RESEARCH WORKER to participate in a programme of pathological research supported by a grant from the Empire Rheumatism Council. Salary £825 rising to £900 in the second year, with F.S.S.U. provision.

Further particulars may be obtained from Professor D. H. COLLINS, Department of Pathology, The University, Sheffield, 10, to whom applications should be sent by 20th July, 1958.

UNIVERSITY OF SOUTHAMPTON. Applications are invited for the appointment of a LECTURER or ASSISTANT LECTURER IN BIOCHEMISTRY in the Department of Physiology and Biochemistry. Salary scale: Lecturer, £900–£50–£1350–£75–£1650, with an efficiency bar at £1300; Assistant Lecturer, £700–£50–£850.

Further particulars should be obtained from the Secretary and Registrar, to whom applications (7 copies from United Kingdom applicants) should be sent not later than 16th July, 1958.

UNIVERSITY OF CAMBRIDGE. Applications are invited for the post of ASSISTANT DIRECTOR OF RESEARCH in the Department of Medicine from 1st October, 1958, to work in the field of medical psychology. The appointment will be subject to the Statutes and Ordinances of the University and will be for a period not exceeding 5 years in the first instance. The pensionable stipend of an Assistant Director of Research in this Department is £1200 a year, rising by annual increments of £100 to £1700 a year.

Candidates should send 10 copies of their application, together with the names of not more than 3 referees, to Dr. G. A. GRESHAM, Secretary of the Appointments Committee of the Faculty of Medicine, The Medical School, Tennis Court-road, Cambridge, so as to reach him not later than 16th July, 1958.

INSTITUTE OF CARDIOLOGY, Recife University, BRAZIL. Applications are invited for the post of RESEARCH CARDIOLOGIST. Candidates must be British subjects, with British qualifications and relevant experience. Salary Cr. 60,000 per month (equivalent to approximately £160 per month). Initial contract 2 or 3 years, renewable. Free medical facilities. First-class return fares, also for family. 30 days' paid leave per year. Secondment may be arranged in appropriate cases.

Write, quoting N1 (58), enclosing stamped addressed foolscap envelope, to Director, Personnel Department, British Council, 65, Davies-street, London, W.1, for further particulars and application form to be returned within 2 weeks of receipt.

KANEMATSU MEMORIAL INSTITUTE OF PATHOLOGY. Applications are invited from qualified medical practitioners for the position of DIRECTOR at a commencing salary of £3616 (Australian currency), including £100 as remuneration for administrative duties. The duties of the Director are mainly to devote himself to his chosen field of medical research. He will also be expected to exercise general supervision over the routine work of the Institute.

Further particulars, set out in a brochure and the 1956 annual report of the Institute, may be obtained from the Editor, THE LANCET, 7, Adam-street, Adelphi, London, W.C.2. Superannuation: Contributory scheme available after completing 1 year's service.

Applications, with copies of published papers, should reach the President, Sydney Hospital, Sydney, New South Wales, Australia, not later than 30th September, 1958.

6th June, 1958. E. C. DOCKING, Secretary.

UNIVERSITY COLLEGE, Ibadan, Nigeria. Applications are invited for (*a*) SENIOR LECTURESHIP and (*b*) LECTURESHIP (Grade I) in Clinical Department of Chemical Pathology. Initial appointments 3 years. Salary scales: (*a*) £1850–£100–£2450 p.a., (*b*) £1700–£100–£2100 p.a. Posts carry honorary appointment as Consultant to University College Hospital. Passages paid for appointee, wife and 3 children under 11 years, on appointment, annual leave and termination. Children's, car, and outfit allowances. F.S.S.U. Part-furnished accommodation.

Detailed applications (10 copies), naming 3 referees, by 28th July, 1958, to Secretary, Senate Committee on Colleges Overseas in Special Relation, University of London, Senate House, London, W.C.1, from whom further particulars may be obtained.

UNIVERSITY COLLEGE OF THE WEST INDIES. Applications are invited for LECTURESHIP IN ANATOMY from candidates with registrable medical qualifications. Duties include lecturing in human anatomy and assistance in practical courses in histology for medical degrees of London University. Salary scale (under review): £1000–£100–£1300–£100–£1700 p.a., entry-point determined by qualifications and experience. Child allowance. F.S.S.U. Unfurnished accommodation at rent 5% basic salary. Passages for up to 5 persons on appointment, normal termination and triennial study leave. Duties to be assumed if possible by 1st November, 1958.

Detailed applications (10 copies), naming 3 referees, by 28th July, 1958, to Secretary, Senate Committee on Colleges Overseas in Special Relation, University of London, Senate House, London, W.C.1, who has further particulars.

UNIVERSITY OF TABRIZ, Iran. Applications are invited for PROFESSORSHIPS in the Faculty of Medicine in the following subjects:—

(i) Pathology.
(ii) Internal Medicine.
(iii) Thoracic Surgery.
(iv) Dermatology.
(v) Microbiology.

Candidates must be British subjects, with British qualifications and relevant teaching experience. Salary, free of tax, 30,000 rials per month (equivalent to about £142) plus 10,000 rials per month (equivalent to about £47) accommodation allowance. Facilities for some private practice and research. Contracts from 3 months to 3 years, renewable. Return fares paid, also for family.

Write, quoting N2 (58), enclosing stamped addressed foolscap envelope, to Director, Personnel Department, British Council, 65, Davies-street, London, W.1, for particulars and application form to be returned completed within 2 weeks of receipt.

Hospital Services: Senior Appointments

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. CONSULTANT ANÆSTHETIST, 7 half-days a week, to be divided between:—

King Edward Memorial Hospital, Ealing, W.13 (including Clayponds Wing, W.5). (Total beds 285.)
Perivale Maternity Hospital, Western-avenue, Greenford (51 Beds).
Brentford Hospital, Boston Manor-road, Brentford (33 Beds).
Acton Hospital, Gunnersbury-lane, W.3 (84 Beds).
Southall-Norwood Hospital, Southall (28 Beds).

Hospitals may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1, before 28th July, 1958.

ELIZABETH GARRETT ANDERSON HOSPITAL, N.W.1 (THE ROYAL FREE HOSPITAL GROUP). Applications are invited from registered Women medical practitioners for the appointment of Part-time CONSULTANT RADIOLOGIST in the X-Ray Diagnostic Department for 3 sessions per week. The appointment will commence on 1st October, 1958. Applicants should hold the D.M.R.D.

Applications, giving details of qualifications and experience, together with the names of 3 referees, should be sent to the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, not later than 30th July, 1958.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.5. Applications are invited for the post of Part-time CONSULTANT in Child Psychiatry for 9 sessions per week, tenable from 1st January, 1959.

Applications (1 copy), giving age, qualifications and experience, together with the names of 3 referees, should be sent to the undersigned not later than 26th July, 1958.

S. W. BARNES, House Governor.

PADDINGTON GENERAL HOSPITAL, Harrow-road, W.9. (580 Beds.) Locum CONSULTANT ORTHOPÆDIC SURGEON required for 5 sessions per week from 1st August, or as soon as possible after, for at least 6 months. There is no existing holder of the post; a permanent appointment is to be made at a later date.

Apply to the Medical Director (CUN. 4884).

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications are invited from registered medical practitioners for the appointment of Part-time CONSULTANT PLASTIC SURGEON. Applicants must be Fellows of the Royal College of Surgeons (England). Appointment to commence 1st October, 1958.

Applications, giving details of qualifications and experience, together with the names of 3 referees, should be sent to the Secretary to the Board of Governors not later than 22nd July, 1958.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications invited for TRAINEE in Medical Administration at Board's headquarters. Initial salary in Medical Officer's grade commences at £1535 for officers aged 33 or over. Superannuable. Period of training not exceeding 1 year.

Full particulars can be obtained from Dr. JAMES FAIRLEY, Senior Administrative Medical Officer, to whom applications should be addressed at 11, Portland-place, W.1, by 7th July.

ST. MARK'S HOSPITAL, City-road, London, E.C.1. Applications invited for the post of CONSULTANT SURGEON for 4 sessions per week. Duties to commence 1st January, 1959.

Detailed applications, names 3 referees, to reach the Secretary, Board of Governors, The Hammersmith, West London and St. Mark's Hospitals, Ducane-road, London, W.12, by 23rd August.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(*a*) Whole-time CONSULTANT PATHOLOGIST, Coventry and Warwickshire Hospital. Duties also at other hospitals in Coventry Group. Wide experience specialty, special interest in hæmatology and higher qualification essential.

(*b*) Part-time CONSULTANT RADIOLOGIST (9 notional half-days weekly). Duties at North Staffs Royal Infirmary (6 notional half-days), Haywood Hospital (3 notional half-days). Wide experience specialty and higher qualification essential.

Applications (15 copies), stating age, nationality, qualifications, present and previous appointments and details of 3 referees, to Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, by 28th July.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Anæsthetics. Locum ANÆSTHETIST (5 half-days per week) required pending substantive Consultant appointment. Consultant, Senior Hospital Medical Officer or Senior Registrar's pay, according to grading of successful applicant. Group covers Royal West Sussex and St. Richard's Hospitals, Chichester, and Bognor, Midhurst and Petworth Hospitals.

Apply, Group Secretary, 174, Broyle-road, Chichester.

MANCHESTER REGIONAL HOSPITAL BOARD. 4 whole-time NON-RESIDENT SENIOR CASUALTY OFFICERS. Appointees will work under general guidance of Consultants. Salary within range £1653 15s.–£52 10s.–£2126 5s. p.a. (according to experience, &c.). Posts tenable for 4 years as follows:—

(*a*) Salford Royal Hospital, near Manchester.
(*b*) Oldham Royal Infirmary, Oldham.
(*c*) Preston Royal Infirmary, Preston.
(*d*) Stockport and Buxton Group of hospitals, mainly at Stockport Infirmary. Appointee will assist Consultant Orthopædic Surgeon and have special responsibilities in Traumatic (including fracture) Clinics.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 7th July, 1958.

LIVERPOOL REGIONAL HOSPITAL BOARD. Ormskirk COUNTY HOSPITAL. Applications are invited for the post of Part-time CONSULTANT OBSTETRICIAN AND GYNÆCOLOGIST giving 2 notional half-days at the above Hospital. Applicants should possess the M.R.C.O.G., and a higher qualification in surgery would be an advantage.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 19th July, 1958.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. Ormskirk GROUP. Applications are invited for the post of Whole-time Locum Tenens ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer) in the above Group for 6 months in the first instance.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 19th July, 1958.

VINCENT COLLINGE, Secretary to the Board.

LINGFIELD HOSPITAL SCHOOL FOR EPILEPTIC CHILDREN. Applications are invited for the post of DEPUTY MEDICAL SUPERINTENDENT. Neurological or pediatric experience desirable. Mainly medical but some administrative duties. Salary according to the scale for Senior Hospital Medical Officers. A house is available at a nominal rent for a married man. Superannuable under F.S.S.N., to which pension rights are transferable.

Applications, stating age, marital status, full particulars of qualifications and experience and names of 2 referees, to be sent to the Medical Superintendent, Lingfield Hospital School, Lingfield, Surrey.

OXFORD REGIONAL HOSPITAL BOARD. Locum CONSULTANT RADIOTHERAPIST required during August and September at Northampton or Reading.

Apply now, stating age, qualifications, experience, and names of 2 referees, to Secretary, 43, Banbury-road, Oxford.

RETFORD, NOTTINGHAMSHIRE. RAMPTON HOSPITAL. (1143 Beds for mental defectives of both sexes exhibiting conduct disorders.) Whole-time MEDICAL SUPERINTENDENT (Consultant). Wide experience in psychiatry, and the D.P.M., necessary. Post is clinical but experience in hospital administration also necessary. Candidates may visit Hospital by appointment with present Medical Superintendent.

Applications, naming 3 referees, and quoting ref. RMS 2, to the Secretary, Board of Control, Division 1(3), Ministry of Health Building, Savile-row, London, W.1, by 4th July, 1958.

SCOTLAND. NORTH-EASTERN REGIONAL HOSPITAL BOARD. Applications are invited for the whole or maximum part-time post of CONSULTANT RADIOLOGIST on the staffs of the Aberdeen General Hospitals and the Aberdeen Special Hospitals.

Applications, together with the names of 2 referees, should be submitted by 11th July, 1958, to the Senior Administrative Medical Officer, 1, Albyn-place, Aberdeen, from whom further particulars and a form of application may be obtained.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. Locum CONSULTANT SURGEON at the Dunfermline and West Fife Hospital, for 3 months in the first instance, from 5th July, 1958.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of CONSULTANT SURGEON in charge of wards at the Western Infirmary, Glasgow. The appointment is part-time on the basis of 7 notional half-days per week.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, not later than 30 days after the publication of this advertisement.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time or maximum Part-time CONSULTANT RADIOLOGIST required. Duties mainly in hospitals in the Mansfield area.

Application forms and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 19th July, 1958.

SHEFFIELD REGIONAL HOSPITAL BOARD. Consultant PHYSICIAN (maximum part-time) required for the Derby Group of hospitals with main duties at the Derbyshire Royal Infirmary. It would be an advantage for applicants to have had paediatric experience as the successful candidate will be on the staff of the Derbyshire Hospital for Sick Children.

Application forms and further details from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 26th July, 1958.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment (whole-time or maximum part-time) of CONSULTANT in Physical Medicine to the Bartford and Medway and Gravesend Groups of hospitals. Candidates should have had considerable experience in the specialty. Both a higher qualification in medicine and the appropriate diploma are desirable. Applicants may visit the hospitals concerned.

Applications, stating nationality, age, sex, qualifications and experience, including details of present appointment and of war or national service, together with the names and addresses of 3 referees, to be sent to the Secretary, Advisory Appointments Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 12th July, 1958.

NORTHERN IRELAND HOSPITALS AUTHORITY. Locum Tenens for CONSULTANT. Applications are invited for a whole-time post as Locum Tenens E.N.T. Surgeon at hospitals managed by the West Tyrone, Fermanagh, and South Tyrone Hospital Management Committees. The appointment will be for a period of not less than 3 months. Remuneration will be at the rate of £34 14s. 6d. per week, or, if the locum is of Consultant status, at the rate of £52 10s. per week. If board and accommodation are available at hospital, this will be provided at the rate of £350 p.a. or, if the locum is remunerated at the Consultant rate, at the rate of £400 p.a. Contributions will be payable under the Health Services Superannuation Scheme. There is reciprocity between Northern Ireland and Great Britain. The persons appointed will be required to take the Oath of Allegiance in accordance with Section 80 of the Health Services Act (Northern Ireland), 1948.

Applications should be made on the prescribed form, which must be returned as soon as possible to the Secretary, Northern Ireland Hospitals Authority, Victory Buildings, 44–46, Queen-street, Belfast.

AUSTRALIA. PRINCE HENRY'S HOSPITAL, MELBOURNE, AUSTRALIA. Applications are invited from legally qualified medical practitioners for the appointment of HONORARY SURGEON to Outpatients.

Applications to be lodged with the undersigned not later than Friday, 18th July, 1958.

R. L. THOMAS, Manager and Secretary.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD, DUNEDIN, NEW ZEALAND. Applications are invited for the position of DIAGNOSTIC RADIOLOGIST, Otago Hospital Board. Applicants must hold a degree in Medicine of an approved University and possess a higher qualification in the specialty. The salary payable will be that of Junior or Senior Specialist under the Hospital Employment (Medical Officers) Regulations, viz: £1640–£2340 p.a. The commencing rate will be determined in accordance with the qualifications and experience of the appointee. The position is a full-time and non-resident one. Travelling expenses as set out in the Conditions of Appointment will be paid when a contract of service has been signed. Conditions of Appointment and application forms may be obtained from the Office of the High Commissioner for New Zealand, 415, The Strand, London.

Applications, stating age, qualifications and experience, together with health and radiological certificates, will be received by the undersigned until 10 o'clock A.M. on Monday, 25th August, 1958.

W. A. WILLIAMSON, Secretary,
Otago Hospital Board.

P.O. Box 946, Dunedin, New Zealand.

TURKEY. ANKARA HOSPITAL. Applications are invited for the following posts in Ankara Hospital, to be filled as soon as possible:

1. BRAIN SURGEON or HEART SURGEON.
2. ANÆSTHETIST.
3. BIOCHEMIST.

Candiates must be British subjects, preferably single, with British qualifications and relevant experience in a United Kingdom hospital.

Salary.—From Turkish lire 3500 a month (equivalent to £5340 a year) to Turkish lire 5000 a month (equivalent to £7644 a year), subject to Turkish tax.

Contracts.—To March, 1959, renewable. Return fares paid.

Write, quoting Q1 (58), and enclosing stamped addressed foolscap envelope to Director, Personnel Department, British Council, 65, Davies-street, London, W.1, for particulars and application form to be returned completed within 2 weeks of receipt.

Hospital Services: Junior Appointments

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. HOUSE SURGEON, pre-registration post, vacant 21st July.

Applications, stating experience, and copies of 2 testimonials, to Hospital Secretary.

BETHNAL GREEN HOSPITAL, Cambridge Heath-road, London, E.2. HOUSE SURGEON, gynæcology and obstetrics, pre-registration post, vacancy 24th July.

Applications, stating experience and copies of 2 testimonials, to Hospital Secretary.

BROMPTON HOSPITAL, S.W.3. Applications invited for post of Part-time CLINICAL ASSISTANT in E.N.T. Department. Duties amounting to 2 sessions weekly include work in Outpatient Clinic as well as operating sessions. Salary at the rate of £183 15s. p.a. per notional half-day.

Applications, stating age, qualifications with dates, nationality and appointments held, together with copies of testimonials, by 5th July, 1958, to KENNETH A. F. MILES, House Governor.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. RESIDENT HOUSE OFFICER (post-registration) required in Department of Obstetrics and Gynæcology. Post recognised for D.Obst.R.C.O.G. and M.R.C.O.G. Post vacant 1st August.

Applications, with 2 testimonials, to Medical Director by 5th July.

CHINGFORD HOSPITAL, London, E.4. (104 Beds.) House OFFICER (medical) required for 6 months with duties at other hospitals in the Group.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

CITY OF LONDON MATERNITY HOSPITAL, Hanley-road, London, N.4. RESIDENT SENIOR HOUSE OFFICER (obstetrics). Appointment vacant 24th July for period of 12 months. Applicants must have had previous obstetric experience. Recognised for M.R.C.O.G.

Application form obtainable from Hospital Secretary and returnable by 8th July.

COLINDALE HOSPITAL, Colindale-avenue, London, N.W.9. (300 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time SURGICAL REGISTRAR, resident or non-resident, required at above Hospital. F.R.C.S. and previous experience an advantage. Work covers surgical treatment of pulmonary, orthopædic, urinary, and tuberculous and non-tuberculous chest diseases. The Hospital is situated within easy reach of central London and may be visited by arrangement with Physician-Superintendent.

Application forms obtainable from and returnable to Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, Edgware, Middlesex, by 5th July, 1958.

CONNAUGHT HOSPITAL, Walthamstow, E.17. (123 Beds.) Applications are invited for the post of SECOND CASUALTY OFFICER with duties in the Department of Orthopædic and Traumatic Surgery (Senior House Officer grade). Recognised for F.R.C.S. Salary £819 10s. p.a., less £150 p.a. for board, lodging, &c.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W. (ROYAL FREE HOSPITAL GROUP). Locum FIRST HOUSE SURGEON required immediately. Post open to registered or pre-registration candidates.

Apply to The Secretary, Elizabeth Garrett Anderson Hospital, Euston-road, N.W.1 (EUSton 2501).

EASTMAN DENTAL HOSPITAL and INSTITUTE OF DENTAL SURGERY (UNIVERSITY OF LONDON), Gray's Inn-road, London, W.C.1. Applications are invited for the full-time non-resident post of ANÆSTHETIST in the grade of Registrar. Remuneration and conditions of service in accordance with national scale. The post is vacant from 1st September, 1958.

Application forms are obtainable from the Director, to whom they should be returned by 21st July, 1958. Canvassing will disqualify.

FRIERN HOSPITAL MANAGEMENT COMMITTEE, New Southgate, London, N.11. Applications are invited from registered medical practitioners for the post of JUNIOR HOSPITAL MEDICAL OFFICER. Salary in accordance with the terms and conditions of service for hospital medical and dental staff. Friern Hospital has 2470 Beds occupied by patients suffering from nervous and mental disorders and is readily accessible to Central London.

Applications, giving age, qualifications and details of experience, together with names and addresses of 2 referees, to the Secretary within 7 days of the appearance of the advertisement.

FRIERN HOSPITAL, London, N.11. (2400 Beds.) Applications are invited for the appointment of SENIOR HOUSE OFFICER. Appointment for 1 year.

Applications, stating full particulars and names of 2 referees, should be sent to the Secretary, Friern Hospital, New Southgate, London, N.11.

HACKNEY HOSPITAL, London, E.9. (857 Beds.) Applications from registered practitioners for appointment to the 6 months' resident post of HOUSE SURGEON, with duties in E.N.T., Plastic Surgery, Orthopædic, and Casualty Departments, should reach Secretary, above address, by 4th July, quoting HH CO.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, N.21. HOUSE SURGEON for gynæcology and general surgery.

Applications, with copies of 3 testimonials with name and address of 1 referee, to Hospital Secretary.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, N.21. HOUSE SURGEON required. Vacant 4th July. Duties mainly orthopædic with some E.N.T. and emergency general surgery. New operating-theatre, outpatient and casualty department. Post recognised for pre-registration service.

Applications, with copies of 3 testimonials and name and address of 1 referee, to Hospital Secretary.

LAMBETH HOSPITAL, Kennington, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the position of HOUSE PHYSICIAN in General Medicine. Vacant 7th August, 1958. The successful candidate will be expected to carry out a fortnight's locum duty from 24th July, 1958.

Application forms from the Secretary at the hospital. A self-addressed envelope should be enclosed.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. A vacancy occurs 1st August, 1958, for RESIDENT HOUSE PHYSICIAN. Appointment for 6 months, 4 in London, 2 at the Country Branch, near Letchworth, and post graded as House Officer. Duties include work in the Outpatient Department and special clinics, as well as in wards.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 testimonials, should reach the undersigned not later than 1st July.

J. ROBBINS, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. A vacancy occurs 1st September, 1958, for RESIDENT SURGICAL OFFICER. Appointment for 6 months, with prospect of renewal. Post graded as Senior House Officer, or Registrar, according to qualifications and previous surgical experience.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 recent testimonials, should reach the undersigned not later than 7th July, 1958. J. ROBBINS, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL (Country Branch). Hospitals FOR DISEASES OF THE CHEST. REGISTRAR in Clinical Pathology (Registrar grade). A vacancy occurs at the Country Branch, near Letchworth. The appointment is a whole-time one and will be for 1 year in the first instance, and the holder may be resident or non-resident.

Applications, stating age, qualifications with dates, and previous experience, together with copies of 3 testimonials, should be forwarded at once to the undersigned.

J. ROBBINS, House Governor.

London Chest Hospital, E.2.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of REGISTRAR to the Skin Department becoming vacant on 1st October, 1958. A higher qualification, although desirable, is not essential.

Applications (10 copies), giving the names and addresses of 3 referees, should be received by the undersigned by 22nd July, 1958. H. BRIERLEY, House Governor.

LONDON JEWISH HOSPITAL, Stepney Green, E.1. (130 Beds.) HOUSE PHYSICIANS (pre- or post-registration). Posts vacant on 3rd and 9th July, 1958. 6 months' appointments.

Applications, stating age, experience, &c., and copies of not more than 3 testimonials, to be sent to the Hospital Secretary.

MEMORIAL HOSPITAL, Shooters Hill, Woolwich, S.E.18. HOUSE SURGEONS, 2 posts, approved for pre-registration purposes and recognised for F.R.C.S.

Applications to Group Secretary, Woolwich Group Hospital Management Committee, Memorial Hospital, Woolwich, S.E.18.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum RESIDENT MEDICAL OFFICER (House Officer grade) required.

Apply immediately to the Administrative Officer.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER (House Officer grade) required.

Applications, with copies of testimonials, to the Administrative Officer.

MILDMAY MISSION HOSPITAL, Austin-street, London, E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE PHYSICIAN CASUALTY OFFICER, vacant on 31st July, 1958. Candidates should be in sympathy with the evangelical Christian aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent as soon as possible.

MILDMAY MISSION HOSPITAL, Austin-street, London, E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE SURGEON (post recognised for F.R.C.S.) vacant on 31st July, 1958. Candidates should be in sympathy with the evangelical Christian aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent as soon as possible.

NATIONAL HOSPITALS FOR NERVOUS DISEASES. Applications are invited from registered medical practitioners for the appointment of ASSISTANT REGISTRAR (non-resident) at The National Hospital, Queen-square, W.C.1, for duty in the Outpatient Department and the Department of Applied Electrophysiology, to commence 1st October, 1958. This post carries the grade of Senior Registrar. The appointment will be for 1 year in the first instance.

Applications, with names of 3 referees, to be sent to the undersigned not later than 12th July, 1958.

H. EWART MITCHELL, Secretary to the Board of Governors.

The National Hospitals for Nervous Diseases,
Queen-square, London, W.C.1.

NELSON HOSPITAL, Kingston-road, Merton, S.W.20. HOUSE SURGEON (resident, not pre-registration). Post vacant now. Recognised for F.R.C.S.

Applications, stating age, qualifications, &c., with the names and addresses of 2 referees, should be sent to the Secretary at above address.

NORTH MIDDLESEX HOSPITAL, London, N.18. OBSTETRIC AND GYNÆCOLOGICAL HOUSE SURGEON, resident, registered or pre-registered (second post), required for 1st August. 6 months' appointment. Recognised by R.C.O.G. for Diploma, and as a combined post for Membership. Candidates must have held house appointment in either medicine or surgery. Large Obstetric and Gynæcological Department.

Applications (in own handwriting), stating age, nationality, qualifications, experience, with copies of recent testimonials, to Group Secretary, by 1st July.

NORTH MIDDLESEX HOSPITAL, London, N.18. Locum REGISTRAR for Thoracic Surgical Unit required 21st July for indefinite period. Non-resident. Higher qualification in surgery desirable but not essential. All types of tuberculous and non-tuberculous thoracic surgery.

Applications, with full particulars and copies of testimonials or names of 2 referees, to Group Secretary.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. GYNÆCOLOGICAL AND OBSTETRIC REGISTRAR for duties in Northern Group of hospitals including High lands General, City of London Maternity, and Royal Northern Hospitals. Candidates may visit Hospitals by direct appointment.

Application forms obtainable from Group Secretary, Royal Northern Hospital, Holloway-road, N.7, returnable by 10th July, 1958.

PRINCESS BEATRICE HOSPITAL, S.W.5. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN for 6 months (Senior House Officer grade); resident. Opportunity to serve a further 6 months as Obstetric Gynæcological House Surgeon in the same grade. Post vacant early July.

Applications, with 3 testimonials, to House Governor by 1st July.

PUTNEY HOSPITAL, Lower Common, S.W.15. House SURGEON. Resident. Vacant immediately. Open to registered practitioners and pre-registration candidates.

Apply Hospital Secretary, enclosing copies of 3 recent testimonials.

REGIONAL NEUROSURGICAL CENTRE. (66 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (neurosurgery). Post recognised for F.R.C.S. and D.P.M. and provides excellent opportunity for training in neurology.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ROYAL EYE HOSPITAL, St. George's Circus, S.E.1. Locum CASUALTY OFFICER (Senior House Officer grade) required, mid-July to 1st October. Successful candidate will be eligible to apply for this and other house appointments vacant on 1st October.

Applications to the Secretary.

ROYAL MARSDEN HOSPITAL, Fulham-road, S.W.3. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON (resident). Salary £577 10s. p.a. Post is tenable for 6 months.

Forms of application are obtainable from the House Governor, to whom applications, together with copies of 3 recent testimonials, should be sent.

ROYAL NATIONAL THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.1, and Golden-square, W.1. RESIDENT HOUSE SURGEON (post-registration post). Applications are invited for a 6-month appointment as from 15th August, 1958, with salary and conditions as laid down for House Officers in the terms and conditions of service in the National Health Service.

Applications, stating age, qualifications, full details of previous experience (particularly in this specialty), with copies of 1–3 recent testimonials, should be sent to the House Governor without delay.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. QUEEN CHARLOTTE'S MATERNITY HOSPITAL. SENIOR HOUSE OFFICER in the Paediatric Department. Resident post tenable for 6 months in the first instance from 1st September, 1958. Duties will include the supervision of the babies, research work under the visiting staff, and charge of the follow-up clinics. Previous experience at a children's hospital is essential and possession of a higher qualification is desirable.

Applications to the House Governor, 339, Goldhawk-road, London, W.6, by 5th July, 1958.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN, Hackney-road, E.2; Shadwell, E.1; and BANSTEAD, SURREY. HOUSE OFFICER appointment for 2 consecutive periods of 6 months, commencing 1st September, 1958; first period House Physician, Shadwell; second period House Surgeon, Banstead (3 months), and Casualty Officer, Hackney-road (3 months).

Application forms may be obtained from the Secretary at Hackney-road, and should be returned, with not more than 3 testimonials, not later than 12th July, 1958.

QUEEN MARY'S HOSPITAL FOR THE EAST END, Stratford, E.15. Applications are invited for the post of Part-time CLINICAL ASSISTANT (G.P. grade) to the Physician-in-Charge Diabetic and Endocrinology Department. The appointment will be for 2 outpatient sessions per week (Tuesday late afternoon and Friday morning), to commence as soon as possible. Remuneration £183 15s. per session p.a.

Applications, together with the names of 2 referees, to the Group Secretary, West Ham Group Hospital Management Committee, Stratford, E.15, by 5th July, 1958.

ST. JAMES' HOSPITAL, Balham, London, S.W.12. WANDSWORTH HOSPITAL GROUP. HOUSE PHYSICIAN (pre-registration) required. Post vacant 21st July.

Applications, stating age, qualifications, experience, and names of 2 referees, to Group Secretary, Wandsworth Hospital Group, at above address by 7th July.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Lisle-street, Leicester-square, London, W.C.2. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER for the Inpatient Department. Vacant 1st October, 1958.

Applications, naming 2 referees, to the Secretary to the Board, by 12th July, 1958.

ST. LEONARD'S HOSPITAL, Nuttall-street, London, N.1. Applications are invited from registered or provisionally registered medical practitioners for the post of HOUSE SURGEON for 6 months.

Applications, with 2 recent testimonials, to the Hospital Secretary by 4th July, 1958.

ST. MARY'S HOSPITAL, Paddington, W.2, and the NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SENIOR REGISTRAR in General Medicine from 1st October, 1958, for combined appointment. First 2 years at Paddington General Hospital, and the final 2 years at St. Mary's Hospital. Possession of higher medical qualification essential. Hospitals may be visited by direct appointment.

Application forms, which may be obtained from the House Governor, must be returned not later than 8th July, 1958.

ST. MARY'S HOSPITAL, W.2, and NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. (Combined appointment.) SENIOR REGISTRAR in Morbid Anatomy, the first 2 years of this appointment being in the new laboratories at Paddington General Hospital. The third and fourth years will be spent in the Department of Morbid Anatomy at St. Mary's Hospital.

Application forms, which may be obtained from the House Governor, St. Mary's Hospital, should be returned not later than 10th July, 1958.

ST. MARY'S HOSPITAL, Paddington, W.2. Registrar in General Medicine (whole-time, non-resident) for first period of 12 months from 1st September, 1958, to undertake work in Casualty and Outpatient Departments, together with certain inpatient duties.

Applications, giving full details with names and addresses of 3 referees, should reach the House Governor not later than 15th July, 1958.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. RESIDENT SURGICAL OFFICER (Senior Registrar grade) required for St. Paul's Hospital on 1st September, 1958. Applications invited from Male candidates on the British register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidate should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies), and the names of 3 referees, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 19th July, 1958.

ST. THOMAS'S HOSPITAL, London, S.E.1. Junior HOSPITAL MEDICAL OFFICER to the Department of Venereal Diseases required immediately, for a period of 1 year in the first instance, to carry out 8 half-day sessions per week.

Applications, naming 2 referees, to the Clerk of the Governors by 5th July, 1958.

WESTMINSTER CHILDREN'S HOSPITAL. Westminster HOSPITAL TEACHING GROUP. CASUALTY OFFICER required for 6 months from 1st August, 1958. Grade House Officer (post-registration) or Senior House Officer dependent on experience. Paediatric experience preferred.

Apply, with copies of 3 testimonials, to the Secretary, Westminster Children's Hospital, Vincent-square, S.W.1, by 12th July.

WIMBLEDON HOSPITAL, Thurstan-road, S.W.20. (62 Beds.) SENIOR HOUSE OFFICER. Hospital has a full Consultant staff and offers excellent experience in medicine and surgery. Good opportunity for postgraduate training. Salary £819 10s. p.a., less residential charge of £150.

Further details of the appointment may be had on request from the Hospital Secretary, and applications stating age, qualifications, experience and nationality, with copies of testimonials, should be addressed to the Group Secretary, St. Heller Hospital, Carshalton, Surrey.

WHITTINGTON HOSPITAL, London, N.19. Registrar in Clinical Pathology required at Group Laboratory; some night and weekend duty. Free accommodation when on duty. Post vacant 10th September, 1958. Laboratory may be visited by appointment with the Group Pathologist.

Application forms obtainable from and returnable to Group Secretary, Archway Group Hospital Management Committee, 46, Cholmeley Park, N.6, by 8th July, 1958.

ABBOTS LANGLEY, WATFORD, HERTFORDSHIRE. LEAVESDEN HOSPITAL. (2250 Beds.) NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR in Psychiatry (mental deficiency) at above Hospital (recognised for D.P.M.). Resident accommodation available for single person, or large flat available for married person. Hospital may be visited by direct appointment with Physician-Superintendent.

Application forms available from and returnable to Group Secretary, Leavesden Hospital, Abbots Langley, Watford, Herts, by 5th July, 1958.

ABERYSTWYTH, CARDIGANSHIRE. GENERAL HOS-PITAL. MID-WALES HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical) required (resident). Post recognised for F.R.C.S. examination. Vacancy immediate.

Applications, stating age, experience, &c., to the Group Secretary, Mid-Wales Hospital Management Committee, 31, North-parade, Aberystwyth, Cardiganshire.

ALTON GENERAL HOSPITAL, Alton. (136 Beds.) SENIOR HOUSE OFFICER (medical) immediate vacancy. Resident candidate should have some experience of anæsthetics.

Applications, stating age, qualifications and experience together with 2 copies of testimonials, to Hospital Secretary.

ALTRINCHAM GENERAL HOSPITAL AND ANNEXE AND E.N.T. DEPARTMENT. (183 Beds.) Applications are invited for the following pre-registration posts vacant July, 1958:

JUNIOR HOUSE OFFICER (medical).
JUNIOR HOUSE OFFICER (surgical).

Applications to Group Secretary, North and Mid Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

ALTRINCHAM GENERAL HOSPITAL AND ANNEXE AND E.N.T. DEPARTMENT. (183 Beds.) SENIOR HOUSE OFFICER (medical). This appointment in a busy Hospital offers excellent opportunities of practical experience. Post vacant mid-September.

Applications, together with 2 recent testimonials, to Group Secretary, North and Mid-Cheshire Hospital Management Committee, The Hospital, Sinderland-road, Altrincham, Cheshire.

ASCOT. HEATHERWOOD ORTHOPÆDIC HOSPITAL. Locum REGISTRAR (orthopædics) required 2 weeks commencing 30th June.

Apply Secretary.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT SENIOR HOUSE OFFICER in Pathology. Previous clinical experience essential but pathological experience not essential.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital, immediately.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON for Traumatic and Orthopædic Unit. 6-month appointment, suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

ASHTON, HYDE AND GLOSSOP HOSPITAL MAN-AGEMENT COMMITTEE. 2 HOUSE PHYSICIANS required at Ashton-under-Lyne General Hospital. Vacant August, 1958. Preference given to pre-registration candidates.

Applications, with copies of 2 testimonials, to Group Secretary, General Hospital, Ashton-under-Lyne, Lancs.

AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCK-INGHAMSHIRE HOSPITAL. Accident and orthopædic and children's general surgery. SENIOR HOUSE OFFICER required 1st August. Recognised for F.R.C.S.

Apply, with 2 names for reference, to Secretary-Superintendent.

AYLESBURY. ROYAL BUCKINGHAMSHIRE HOS-PITAL. CASUALTY OFFICER (Senior House Officer) required mid-August. Post recognised for F.R.C.S. Self-contained furnished flat available at moderate rental.

Apply, with copies of 2 recent testimonials, to Secretary-Superintendent.

BALLOCHMYLE HOSPITAL, Ayrshire. (320 Beds.) HOUSE OFFICER (gynæcology). Vacant 1st September. Resident post-registration appointment, recognised M.R.C.O.G. Offers wide experience under Consultant supervision. National terms.

Apply immediately Area Medical Superintendent, Ballochmyle Hospital (Telephone: Catrine 281).

BARNSLEY. BECKETT HOSPITAL. Locum Anæs-THETIST (Senior House Officer) required for approximately 8 weeks. Recognised for F.F.A. R.C.S.

Applications at once to Group Secretary, Barnsley Hospital Management Committee, 33, Gawber-road, Barnsley.

BARNSTAPLE, NORTH DEVON INFIRMARY. (105 Beds.) HOUSE SURGEON (pre-registration) required from mid-July.

Applications, naming 2 referees, to Group Secretary, 19, Alexandra-road, Barnstaple, N. Devon.

BEDFORD GENERAL HOSPITAL. (431 Beds.) House SURGEON required. Pre- or post-registration; recognised for F.R.C.S. Vacant early July. Post offers exceptional opportunities for general experience in busy acute surgical units.

Enquiries and applications, with copies of 2 recent testimonials, to be sent immediately to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BARRY ACCIDENT AND SURGICAL HOSPITAL. SENIOR HOUSE OFFICER required. House available to rent.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

BEBINGTON, WIRRAL, CHESHIRE. CLATTERBRIDGE HOSPITAL. CENTRAL WIRRAL GROUP. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (casualty orthopaedics) (resident or locum). Salary in accordance with current terms and conditions of service—i.e., £852 10s.–£55–£1182 10s. p.a., less £170 p.a. for residential facilities.

Application forms, obtainable from the Secretary, should be returned within 10 days of the appearance of this advertisement.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) HOUSE SURGEON (House Officer or Senior House Officer grade according to experience). Vacant now. General surgical duties, some orthopaedics. Offers good opportunity for general experience in busy acute general hospital. Recognised for F.R.C.S. Approved pre-registration post but fully registered practitioners may apply.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

BEXHILL HOSPITAL, Bexhill-on-Sea. (61 Beds.) Senior HOUSE OFFICER. Applications are invited for this post (resident preferred) for a period of 1 year. National scale of salary.

Apply to Hospital Administrator.

BEXHILL HOSPITAL, Bexhill-on-Sea. (61 Beds.) House SURGEON (resident) required. Pre-registration post vacant now. National scale of salary.

Apply to Hospital Administrator.

BIRMINGHAM ACCIDENT HOSPITAL, Bath-row, BIRMINGHAM, 15. (215 Beds and 8 House Surgeons.) HOUSE SURGEON (resident). Hospital largest traumatic unit in the country and treats over 50,000 new patients each year. Recognised for purpose of casualty by R.C.S. (Eng.). Teaching programme by Consultant staff. 6-month appointment, some of which may be spent in 42-bedded Medical Research Council's Burns Unit.

Apply, naming 2 referees, to Administrator.

BIRMINGHAM, 9. LITTLE BROMWICH GENERAL HOSPITAL. PÆDIATRIC HOUSE PHYSICIAN (Male/Female), vacant 1st August, 1958. Recognised for D.C.H. Includes duties on infectious diseases wards, Neonatal Department, and Clinics.

Applications to Physician-Superintendent by 2nd July, 1958.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Whole-time SENIOR PSYCHIATRIC REGISTRAR. Duties at All Saints' Hospital (1385 Beds) and Ufficulme Early Treatment Centre, Birmingham. Experience specialty required. Successful candidate may subsequently be required to spend not more than 2 years in a selected hospital of the United Birmingham Hospitals in accordance with arrangements for the interchange of Senior Registrars agreed by the 2 Boards.

Application forms from Secretary, 10, Augustus-road, Birmingham, 15, to be returned by 14th July.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Registrar), vacant 7th September, 1958, for 1 year. Preference will be given to applicants with a knowledge of pædiatric surgery and who hold a higher qualification.

Forms of application and details of the post may be obtained from the House Governor and should be returned by 12th July, 1958. G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. SENIOR HOUSE OFFICER (casualty) required, resident or non-resident, for 1 year from 21st September, 1958. Duties include the reception of acute medical and surgical emergencies, the outpatient treatment of minor conditions, and minor surgical lists. Post recognised for the D.C.H.

Details of the post may be obtained from the House Governor, together with a form of application which should be returned to him by 12th July, 1958.

G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, Birmingham, 16. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant 19th September, 1958. The post is suitable for persons training for pædiatrics or contemplating a career in pathology. The holder is expected to attend clinical rounds and meetings and to assist in the investigation of clinical problems.

Forms of application obtainable from the House Governor should be returned to him by 19th July, 1958.

G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. Applications are invited for the appointment of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade) at the Queen Elizabeth Hospital, Birmingham. There are 3 Residents attached to the Department of Clinical Pathology. In addition to affording general experience in hæmatology, bacteriology and some biochemistry, the appointment can provide opportunities for those studying for higher qualifications in medicine. The appointment is tenable for 1 year.

Application forms should be obtained from the Secretary to the Board of Governors, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned to him as soon as possible.

BISHOP'S STORTFORD, HERTFORDSHIRE. HERTS AND ESSEX GENERAL HOSPITAL. Applications invited for post of HOUSE OFFICER (surgical—pre-registration). Salary £467 10s. –£522 10s. p.a., less £125 for residential emoluments. Applications will also be considered from fully registered practitioners. Appointment to commence immediately.

Applications, stating age, nationality, qualifications and experience, with copies of 2 testimonials or names of referees, to Hospital Secretary.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. SENIOR HOUSE OFFICER or JUNIOR HOSPITAL MEDICAL OFFICER ANÆSTHETIST required at the above Hospital. Grading according to qualifications and/or experience.

Applications, including names of 3 referees, to Group Secretary, South West Durham Hospital Management Committee, by 5th July.

BLACKBURN. ROYAL INFIRMARY. (262 general beds.) BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (casualty and orthopædics) required 11th September, 1958. Recognised for F.R.C.S.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE.

Royal Infirmary, Blackburn

HOUSE PHYSICIAN required for 23rd July, 1958. Post recognised for pre-registration purposes.

HOUSE SURGEON required for 28th July, 1958. Post recognised for F.R.C.S. and approved for pre-registration purposes.

Queen's Park Hospital, Blackburn

HOUSE SURGEON required 23rd July, 1958. Recognised for F.R.C.S. and approved for pre-registration purposes.

HOUSE PHYSICIAN required 1st August, 1958. Post recognised for pre-registration purposes.

Victoria Hospital, Accrington

HOUSE PHYSICIAN required 1st August, 1958. Post recognised for pre-registration purposes.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE.

Royal Infirmary, Blackburn

HOUSE SURGEON required for 17th August, 1958. Recognised for F.R.C.S. and approved for pre-registration purposes.

Victoria Hospital, Accrington

SENIOR HOUSE OFFICER (medicine) required 22nd July, 1958.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BOGNOR WAR MEMORIAL HOSPITAL. (32 Beds.) RESIDENT SENIOR HOUSE OFFICER required to work under visiting Consultant Surgeon and Physician; also casualty work. Salary £819 10s. less £150 p.a. for residence. Modern fully-equipped theatre. Good liaison with Chichester main hospitals and with local general practitioners. Also gives opportunity for postgraduate reading.

Apply, giving 3 referees' names, to Group Secretary, Chichester Group Hospital Management Committee, 174, Broyle-road, Chichester.

BOLTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

RESIDENT ANÆSTHETIST (Senior House Officer grade), Main duties at Bolton Royal Infirmary and Bolton District General Hospital. Now vacant, tenable for 12 months and recognised for the D.A. and F.F.A.R.C.S.

RESIDENT MEDICAL OFFICER (Senior House Officer grade). Vacant 10th August and tenable for 12 months. Successful candidate will be required to reside at Hulton Hospital (131 Beds). Married quarters available. Duties include care of infectious and dermatological cases and some rheumatism and geriatric cases, and may include outpatient and inpatient duties in the Hospitals of the Group.

Bolton District General Hospital (607 Beds)

RESIDENT HOUSE SURGEONS (2). 1 vacant immediately and 1 7th July, tenable for 6 months and recognised under pre-registration service scheme. Also recognised for F.R.C.S.

RESIDENT HOUSE PHYSICIANS (3). Vacant 12th July, 1st August, and 13th August. Tenable for 6 months and recognised under pre-registration service scheme.

The Royal Infirmary, Bolton (238 Beds)

RESIDENT HOUSE SURGEONS (3). Vacant 9th July, 15th July, and 1st August, tenable for 6 months and recognised under pre-registration service scheme. Also recognised for F.R.C.S.

Applications, stating age, nationality, qualifications, experience and the names of 2 referees, to Group Secretary, The Royal Infirmary, Bolton.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road. BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of 3 HOUSE PHYSICIANS. The appointments, which become vacant at the beginning of and mid-August, are recognised for pre-registration purposes.

Applications to the Hospital Secretary.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (314 Beds.) HOUSE SURGEON (including gynæcology) required 1st August, 1958. Pre-registration and recognised for F.R.C.S.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of SENIOR HOUSE OFFICER (orthopædics). Recognised for F.R.C.S. examinations. Salary in accordance with national scale. Vacant 9th August, 1958.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7, as soon as possible.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON to the Orthopædic Unit. Salary in accordance with national scales. This is a pre-registration appointment. Vacant early in July.

Applications, stating age, qualifications, and experience, and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON (recognised for F.R.C.S.) to the General Surgical Unit (60 Beds). The post will be vacant on 1st August, 1958. Salary in accordance with national scale. The post is recognised as a pre-registration appointment.

Applications, stating age, qualifications, experience and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7.

BRIGHTON, 1. NEW SUSSEX HOSPITAL FOR WOMEN, Windlesham-road. Locum SENIOR HOUSE SURGEON, Female (Senior House Officer grading), required for the period 23rd July–5th August, 1958, inclusive. Salary at the rate of £15 19s. per week less residential emoluments.

Applications, with full particulars, to be sent to the Administrative Officer by 7th July, 1958.

BRIGHTON. ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road. (130 Beds.) BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. Vacancy for HOUSE SURGEON for 6 months from 3rd July, 1958. The post offers wide experience in paediatrics and is recognised for D.C.H. Open to pre-registration candidates.

Applications, stating age, nationality, qualifications and experience, together with copies of recent testimonials, to be sent to the Administrative Officer as soon as possible.

BRIGHTON. ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road. (130 Beds.) BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. Vacancy for HOUSE PHYSICIAN for 6 months from 31st July, 1958. The post offers wide experience in paediatrics and is recognised for D.C.H.

Applications, stating age, nationality, qualifications and experience, together with copies of recent testimonials, to be sent to the Administrative Officer by 8th July, 1958.

BRIGHTON. SUSSEX EYE HOSPITAL. (56 Beds.) SENIOR HOUSE SURGEON (Senior House Officer grade) and HOUSE SURGEON required end of August. Both posts recognised for F.R.C.S. and D.O. Successful applicant for the post of House Surgeon will be considered for the senior post on completion of 6 months.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRADFORD ROYAL INFIRMARY, Yorkshire. Senior HOUSE OFFICER (general medicine, with some duties in pathology) required. Post vacant 1st August, 1958.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary.

BRADFORD. ST. LUKE'S HOSPITAL. Senior House OFFICER (general medicine and pathology). Vacant 14th July, 1958.

Applications, stating age, nationality, qualifications and experience, with copy testimonials, to Secretary, Royal Infirmary, Bradford.

BRISTOL. COSSHAM MEMORIAL HOSPITAL. (88 Beds, acute medicine and surgery, and Casualty Department.) Vacancy for SENIOR HOUSE OFFICER in General Surgery. Unmarried accommodation only. Tenable initially for 1 year, renewable by mutual agreement.

Applications, stating age and experience, and naming 2 referees, to the Hospital Secretary, Cossham Memorial Hospital, Kingswood, Bristol, by 11th July, 1958.

BRISTOL. MANOR PARK HOSPITAL. (650 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER. Salary £852 10s.–£55–£1182 10s. Furnished accommodation available, together with board and laundry, for which a charge of £170 p.a. is made. The Hospital caters largely for chronic illness in the older age group with some acute medical work. Consultant staff visit regularly, and there is ample time for postgraduate study.

Applications, stating age, nationality, whether married or single, experience, qualifications, and names and addresses of 2 referees, to be sent to the Group Secretary, Manor Park Hospital, Manor-road, Fishponds, Bristol, within 7 days of the appearance of this advertisement.

BRISTOL MENTAL HOSPITAL MANAGEMENT COM-MITTEE. BARROW AND FISHPONDS HOSPITAL. Applications invited from registered medical practitioners for appointment as SENIOR HOUSE OFFICER. Experience in general medicine or neurology an advantage. The Group includes modern Admission Units, Neurosis Centre, and Day Hospital, with departments of applied psychology and electroencephalography. The appointment offers opportunities for experience in many aspects of acute and chronic psychiatric illness. Board-residence can be provided for a single officer.

Applications, giving details of experience, and names of 3 referees, should be sent to Medical Superintendent, Barrow Hospital, Barrow Gurney, near Bristol.

BURNLEY AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics). The post offers good all-round experience under Consultant staff and is recognised for the Diploma in Anæsthetics. Resident accommodation is available.

Applications, with 2 references, to the Group Secretary, Burnley General Hospital.

BURNLEY AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. SENIOR HOUSE OFFICER (paediatrics). This post provides wide and varied experience in all branches of paediatrics and there is a new Paediatric Unit at the main Hospital. Post recognised for D.C.H. Good accommodation available.

Applications, with 2 references, to Group Secretary, Burnley General Hospital.

BURNLEY AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. BURNLEY GENERAL HOSPITAL (641 Beds). BURNLEY VICTORIA HOSPITAL (171 Beds). RESIDENT HOUSE OFFICERS (medical). The appointments are approved as pre-registration posts. Vacant July.

Applications, with 2 references, to Group Secretary, Burnley General Hospital.

BURNLEY AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. BURNLEY GENERAL HOSPITAL (641 Beds). BURNLEY VICTORIA HOSPITAL (171 Beds). RESIDENT HOUSE OFFICERS (surgical). The appointments are approved as pre-registration posts and recognised for F.R.C.S. Subject to satisfactory service, the successful applicants will be favourably considered for appointment as House Physician at the termination of contract as Surgical House Officer. Positions vacant July.

Applications, with 2 references, to Group Secretary, Burnley General Hospital.

BURNLEY GENERAL HOSPITAL. (641 Beds.) Resident HOUSE OFFICER (gynæcology). The appointment is recognised as a pre-registration post and also recognised for M.R.C.O.G. Subject to satisfactory service, the successful applicant will be favourably considered for an obstetric appointment. Position vacant August.

Applications, with 2 references, to Group Secretary, Burnley and District Hospital Management Committee, Burnley General Hospital, Burnley.

BURTON-ON-TRENT. THE GENERAL HOSPITAL. HOUSE OFFICER (orthopædics) (pre-registration post) required at the above Hospital. Recognised for F.R.C.S.

Applications to Group Secretary as soon as possible.

BURTON-ON-TRENT GENERAL HOSPITAL. Applications are invited for the post of Pre-registration HOUSE SURGEON (general) at the above acute General Hospital of 251 Beds. Recognised for F.R.C.S.

Apply Group Secretary, General Hospital, Burton-on-Trent.

BURTON-ON-TRENT GENERAL HOSPITAL. Junior HOSPITAL MEDICAL OFFICER ANÆSTHETIST required at the above acute General Hospital of 251 Beds. Recognised for D.A.

Applications to Group Secretary.

BURY AND ROSSENDALE HOSPITAL MANAGEMENT COMMITTEE. BURY GENERAL HOSPITAL. Applications invited for the post of SENIOR HOUSE OFFICER in Casualty. The post, which is recognised for the examination of the F.R.C.S., will be vacant mid-July.

Apply, stating full details of experience, &c., and names of 2 referees, to H. WILKINSON, Group Secretary, Bury General Hospital.

BUSHEY MATERNITY HOSPITAL, Bushey Heath, HERTFORDSHIRE. (50 Beds.) RESIDENT OBSTETRIC HOUSE SURGEON for above Hospital. Duties include antenatal and other clinics at the Edgware General Hospital, Edgware, Middlesex. Post vacant 4th July, 1958. 6 months' appointment. Post recognised for D.Obst.R.C.O.G. and for pre-registration purposes.

Applications, stating age, qualifications, experience, and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Hospital immediately.

CAMBRIDGE. THE UNITED CAMBRIDGE HOS-PITALS. ADDENBROOKE'S HOSPITAL, CAMBRIDGE. HOUSE OFFICER (E.N.T. Department) for 6 months from 20th August. Pre-registration (surgical) or post-registration applications will be considered.

Apply to the Secretary by 12th July, stating age, nationality, qualifications and experience with dates, and with copies of 3 testimonials. Interviews late July.

CAMBRIDGE. THE UNITED CAMBRIDGE HOS-PITALS. ADDENBROOKE'S HOSPITAL, CAMBRIDGE. HOUSE SURGEONS (2) for 6 months from 17th and 18th August. Recognised pre-registration service.

Apply to the Secretary by 12th July, stating age, nationality, qualifications and experience with dates, and with copies of 3 testimonials. Interviews later July.

CAMBRIDGE. THE UNITED CAMBRIDGE HOS-PITALS. CASUALTY OFFICER, Senior House Officer grade, 1 year from mid-August.

Apply to the Secretary, stating age, nationality, qualifications and experience, with dates, and with copies of 3 testimonials, by 5th July.

CANTERBURY. KENT AND CANTERBURY HOS-PITAL. (277 Beds.) The post of SENIOR HOUSE PHYSICIAN becomes vacant at the end of July, 1958. Salary £819 10s. p.a. with National Health Service conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOS-PITAL. (277 Beds.) The post of OBSTETRIC HOUSE SURGEON, which is recognised for the M.R.C.O.G. and D.Obst.-R.C.O.G. becomes vacant towards the end of July, 1958. National Health Service salary and conditions.

Applications, together with 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOS-PITAL. (277 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (pathology), which becomes vacant mid-July, 1958, for 1 year. Salary £819 10s. p.a., with National Health Service conditions. Experience in pathology not essential but candidates must have had previous clinical experience.

Applications, stating age, qualifications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARDIFF HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (non-resident) required to commence end of July in Casualty Department, with duties in Observation Unit of St. David's Hospital, Cardiff.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF (near). PRINCE OF WALES ORTHOPÆDIC HOSPITAL, RHYDLAFAR, near CARDIFF. SENIOR HOUSE OFFICER required at above Hospital. Married or single accommodation available.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. GLAN ELY HOSPITAL, Fairwater, Cardiff. There is a vacancy for a SENIOR HOUSE OFFICER at this Hospital, which has 240 Beds, for the treatment of tuberculosis —both pulmonary and non-pulmonary—and allied chest conditions. Experience available in thoracic surgery and operative treatment of bone and joint, genito-urinary, and glandular tuberculosis.

Form of application from Group Secretary, 44, Cathedral-road, Cardiff.

CARDIFF ISOLATION HOSPITAL. (219 Beds.) Senior HOUSE OFFICER required at above Hospital. Hospital serves wide area, gives opportunity for study of infectious diseases; has poliomyelitis respiratory unit and medical and convalescent beds. Post vacant late August.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. ROOKWOOD HOSPITAL. Senior House OFFICER (surgical) required at above Hospital.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF, ST. DAVID'S HOSPITAL. Senior House OFFICER (resident) required immediately in Geriatric Unit (200 Beds) at above Hospital.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARDIFF. THE UNITED CARDIFF HOSPITALS. Applications are invited for the appointment of REGISTRAR in Ophthalmology at the Cardiff Royal Infirmary. Non-resident post, to commence early August.

Application forms are available from the Secretary to the Board at the Cardiff Royal Infirmary, Newport-road, Cardiff, and should be returned within 14 days of the appearance of this advertisement.

CARLISLE. CUMBERLAND INFIRMARY, CITY GENERAL HOSPITAL and CITY MATERNITY HOSPITAL. Applications are invited for the following appointments:—

SENIOR HOUSE OFFICER (general medicine). 6 months' or 12 months' period from 1st August, 1958.

HOUSE OFFICER (obstetrics and gynæcology). Recognised for D.Obst.R.C.O.G. and pre-registration. 6 months' period from 1st August, 1958.

HOUSE OFFICER (mainly gynæcology with some obstetrics). Pre-registration. 6 months' period from 1st September, 1958, or earlier.

SENIOR HOUSE OFFICER (orthopædics). 6 months' or 12 months' period. Now vacant.

Applications, with 2 names for reference purposes, to be sent to the Group Secretary, East Cumberland Hospital Management Committee, Cumberland Infirmary, Carlisle.

CARLUKE, LANARKSHIRE. LAW HOSPITAL. (790 Beds.) Applications are invited for the following posts, commencing 1st August, 1958:—

(*a*) JUNIOR HOSPITAL MEDICAL OFFICER or SENIOR HOUSE OFFICER (orthopædic).

(*b*) Pre-registration HOUSE OFFICER (orthopædic). This post can, if so desired, be held part of the time in orthopædic surgery and part in general surgery.

The Orthopædic Unit has 120 Beds and deals with the accident work from a considerable part of Lanarkshire.

Applications, stating age, qualifications and experience, together with the names of 2 referees, should be submitted to the Group Medical Superintendent as soon as possible.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (A general children's hospital of 550 Beds.) SURGICAL AND ORTHOPÆDIC REGISTRAR required for duties which include shared Registrar responsibility for 120 orthopædic beds and 60 acute and general beds. Applicants are invited to visit the hospital by appointment with the Physician-Superintendent.

Applications, which should be made on forms obtainable from the Group Secretary, should be returned immediately.

CHELMSFORD. ST. JOHN'S HOSPITAL. Applications are invited from registered practitioners for the post of RESIDENT PÆDIATRIC HOUSE OFFICER (Male or Female), commencing as soon as possible. To work in the Pædiatric Unit of the Chelmsford Hospital Group. The Unit includes a Premature Baby Nursery of 10 Cots, and a Neonatal Department in the maternity block of the Hospital. The Department is recognised for the D.C.H.

Applications, stating age, nationality, qualifications and experience, together with recent testimonials, should be forwarded immediately to the Group Secretary, Chelmsford Group Hospital Management Committee, Chelmsford and Essex Hospital, London-road, Chelmsford.

CHELTENHAM GENERAL HOSPITAL. (220 Beds.) HOUSE SURGEON required (pre- or post-registration). The post offers a wide experience in general surgery, gynæcology, and orthopædic surgery. Post recognised for the F.R.C.S.

Apply, with names of 2 referees, to the Secretary, General Hospital, Cheltenham.

CHELTENHAM MATERNITY HOSPITAL. Cheltenham GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER. The Hospital which is recognised for the purpose of training for the D.Obst. R.C.O.G. has 50 Beds and deals with the majority of abnormal midwifery cases in North Gloucestershire. The appointment is for a period of 12 months and will be vacant immediately.

Applications giving age, qualifications, experience, and names and addresses of 3 referees should be sent to the Secretary, Cheltenham Group Hospital Management Committee, General Hospital, Cheltenham.

CHESTERFIELD ROYAL HOSPITAL. House Surgeon required mid-July at above Hospital. Post recognised for pre-registration and F.R.C.S. purposes, and if desired medical post can be offered after 6 months.

Please apply to Group Secretary, Chesterfield Hospital Management Committee, with names of 2 referees.

CHESTER-LE-STREET GENERAL HOSPITAL. (204 Beds.)

HOUSE PHYSICIAN (general medicine). Approved pre-registration post.

SENIOR HOUSE OFFICER (general surgery). Post recognised under F.R.C.S. regulations.

HOUSE SURGEON (general surgery). Approved pre-registration appointment, and recognised under F.R.C.S. regulations.

Posts vacant 1st August, 1958.

Apply, with names and addresses of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

CHICHESTER. ST. RICHARD'S HOSPITAL. (400 Beds.) CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Required HOUSE SURGEON (pre-registration), for 6 months only in the first instance. Post vacant mid-July, 1958. The Man or Woman appointed will work primarily in the surgical wards of the Hospital. Hospital recognised for F.R.C.S.

Applications, stating age, qualifications and experience, giving names of 2 persons from whom reference may be obtained, should be sent to the Surgeon-Superintendent.

COLCHESTER, ESSEX. SEVERALLS HOSPITAL. SENIOR HOUSE OFFICER required at the above Mental Hospital. There are excellent opportunities for up-to-date experience and postgraduate work in all branches of psychiatry, including treatment of neurosis. Opportunities will be given at the Hospital for clinical instruction for the D.P.M.

Applications, with particulars and copies of testimonials, or names of referees, to the Medical Superintendent as soon as possible.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for:—

Black Notley Hospital, Braintree, Essex (522 Beds)

Post of SENIOR HOUSE OFFICER, for Non-Pulmonary Tuberculosis Unit of approximately 120 Beds, particularly for skeletal and renal tuberculosis; also rheumatoid arthritis cases and spastic children. Recognised for F.R.C.S.

Post of HOUSE PHYSICIAN. Pre-registration or third post. Includes duties in medical and pædiatric wards. Tenable for 6 months.

Post of HOUSE SURGEON. Pre-registration or third post. Includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S. Tenable for 6 months.

Clacton and District Hospital, Clacton-on-Sea, Essex (58 Beds)

Post of SENIOR HOUSE OFFICER. Duties include medical, surgical, and casualty work. Post tenable for 6 months or 1 year.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester, Essex.

DERBY. DERBYSHIRE CHILDREN'S HOSPITAL. (86 Beds.) Applications invited for post of HOUSE OFFICER or SENIOR HOUSE OFFICER (pædiatrics), vacant 16th July, 1958, tenable for 6 months. Duties mainly surgical, but includes some medicine. Post recognised for D.C.H. and is open to pre-registration graduates.

Applications, with names of 2 referees, to be sent as soon as possible to Secretary.

DORCHESTER. DORSET COUNTY HOSPITAL. House SURGEON (Male or Female) required for resident, pre-registration post becoming vacant early August. Recognised for F.R.C.S. examination and tenable for 6 months.

Applications, stating age, qualifications, together with copy testimonials, to Group Secretary, West Dorset Hospital Management Committee, Damers-road, Dorchester, Dorset.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) SENIOR HOUSE PHYSICIAN. Vacant now. Duties to include acute and chronic medicine.

Detailed applications, with references, to the Group Secretary Westwood Hospital, Beverley, Yorkshire.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) JUNIOR HOUSE PHYSICIAN, vacant now. Approved pre-registration post, but fully registered practitioners may apply. Duties to include geriatrics and acute medicine. Good general experience for first house appointment.

Apply Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) HOUSE SURGEON (first, second or third post). Vacant early July. General surgery, casualty and some orthopædics. Approved pre-registration post. Fully registered practitioners may apply.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DURHAM. DRYBURN HOSPITAL. (309 Beds.) House PHYSICIAN (Pædiatric Unit of 42 Beds). Approved pre-registration appointment and recognised for D.C.H. Post vacant 1st August, 1958.

Apply, with names and addresses of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

EBBW VALE GENERAL HOSPITAL. (General beds 71, maternity 15.) Applications are invited for the vacancy of JUNIOR HOSPITAL MEDICAL OFFICER. Staff comprises Resident Consultant Surgeon, visiting Orthopædic, Gynæcological and Ophthalmic Surgeons, and Resident House Officer. Appointment shall be for a period not exceeding 4 years.

Apply, with full details and references, to Group Secretary, North Monmouthshire Hospital Management Committee, Nevill Hall Hospital, Abergavenny, Mon.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (704 Beds.) Part-time CLINICAL ASSISTANT required for up to 4 sessions per week in the Department of Physical Medicine at above Hospital. Salary £183 15s. p.a. per weekly notional half-day. Post vacant 1st September, 1958.

Applications, stating age, qualifications and experience and the names and addresses of 2 referees, to Group Secretary, Hendon Group Hospital Management Committee, Edgware General Hospital, Edgware, Middlesex, by 5th July, 1958.

DOUGLAS. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) Applications are invited for pre-registration post of HOUSE SURGEON. Salary in accordance with Whitley scale. 4 residents on staff. Post vacant mid-August.

Apply to the Secretary, Noble's Hospital, Douglas, Isle of Man.

DOUGLAS. NOBLE'S ISLE OF MAN HOSPITAL. (160 Beds.) SENIOR HOUSE SURGEON required at this busy general hospital. Suitable post for candidate seeking further clinical experience and reading for higher qualifications. Recognised for F.R.C.S. 4 House Officer posts. National Health Service salary and conditions. Post becomes vacant early June.

Apply, giving usual particulars, and names of 2 referees, to the Secretary, Noble's Isle of Man Hospital, Douglas.

EAST GRINSTEAD, SUSSEX. QUEEN VICTORIA HOSPITAL. (PLASTIC SURGERY AND JAW INJURIES UNIT.) TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER required. Appointment vacant 1st August, 1958, for 6 months, offering considerable opportunity to gain experience in plastic surgery and jaw injuries work.

Apply, stating age, and names of 3 referees, to Hospital Secretary.

ENFIELD, MIDDLESEX. CHASE FARM HOSPITAL. RESIDENT HOUSE PHYSICIAN (approved pre-registration). Vacant 30th August, 1958. General medical duties. 6 months' appointment.

Applications in own handwriting, with copies of testimonials, to the Group Secretary, Enfield Group Hospital Management Committee, at Chase Farm Hospital.

ENFIELD. WAR MEMORIAL HOSPITAL, Chase Side, ENFIELD, MIDDLESEX. RESIDENT SENIOR HOUSE OFFICER required immediately for general medical and surgical duties in acute general hospital of 61 Beds. 12-month appointment.

Applications, with names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, Chase Farm Hospital, The Ridgeway, Enfield, Middlesex.

EPPING. ST. MARGARET'S HOSPITAL. Senior House OFFICER (chest diseases and casualty) required for Tuberculosis Wards in busy general hospital. 40 chest diseases beds run in conjunction with clinic within the grounds. Good experience. Modern methods of treatment. Candidate required to devote one-third of time to casualty duties. Appointment vacant 2nd August, 1958—locum appointment available for preceding fortnight.

Applications, with copies of 2 recent testimonials, to be sent to the Group Secretary, Epping Group Hospital Management Committee, Oak Cottage, The Plain, Epping, Essex, by 4th July, 1958.

EPPING. ST. MARGARET'S HOSPITAL. Resident SENIOR HOUSE OFFICER (surgery). Post vacant 11th August. Recognised for F.R.C.S. Busy general hospital with easy access to London.

Applications, with copies of 2 testimonials, to reach the Group Secretary, Epping Group Hospital Management Committee, Oak Cottage, The Plain, Epping, Essex, by 11th July, 1958.

EPSOM, SURREY. WEST PARK HOSPITAL (for all stages of nervous and mental disorders). WEST PARK HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of a REGISTRAR in Psychiatry at above Hospital. Candidates may be of either sex. Single residential quarters available. All modern methods are practised and there are facilities for study for the D.P.M. Within easy reach of London.

Application forms obtainable from the Group Secretary to the West Park Hospital Management Committee, Epsom, Surrey, to whom they should be returned not later than 12th July, 1958.

GLASGOW. VICTORIA INFIRMARY. Senior House OFFICERS (general medicine), 2 posts. Applications are invited from registered medical practitioners of not less than 1 year's standing. The appointments are for 1 year from 1st September, 1958. Holders will be required to spend 6 months as resident House Physician in the Cardiac and Metabolic Unit and 6 months, non-resident, with a General Medical Unit.

Applications, with names of 2 referees, to the Secretary, Board of Management for Glasgow Victoria Hospitals, 24, St. Vincent-place, Glasgow, C.1.

GLASGOW ROYAL INFIRMARY.

SENIOR HOUSE OFFICER (surgery).

JUNIOR HOSPITAL MEDICAL OFFICER (orthopædics).

Duties at above Infirmary.

Applications in writing, supported by the names of 3 referees, to the Secretary and Treasurer, Board of Management for Glasgow Royal Infirmary and Associated Hospitals, 135, Buchanan-street, Glasgow, C.1.

GRIMSBY GENERAL HOSPITAL. (226 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT MEDICAL REGISTRAR required. Hospital has up-to-date medical library. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th July, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

GUILDFORD. ROYAL SURREY COUNTY HOSPITAL. RESIDENT HOUSE SURGEON required for general surgery. Post is vacant on 6th July and tenable for 6 months. It is approved for pre-registration candidates and recognised for the F.R.C.S. examination.

Applications, with copies of 3 testimonials, should be sent to the Hospital Secretary as soon as possible.

GRAVESEND AND NORTH KENT HOSPITAL, GRAVESEND, KENT. MEDWAY AND GRAVESEND HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON. Applications are invited for this pre-registration post, vacant now. Post offers experience in obstetrics, gynæcology and orthopædics, as well as general surgery. Salary £467 10s.–£577 10s. p.a., according to experience.

Applications, stating age, qualifications, nationality and experience, to Hospital Secretary.

GRAVESEND AND NORTH KENT HOSPITAL, GRAVESEND, KENT. MEDWAY AND GRAVESEND HOSPITAL MANAGEMENT COMMITTEE. RESIDENT SURGICAL OFFICER (Senior House Officer grade) required for new post. Excellent experience in busy general hospital. Salary £819 10s., less £150 p.a. for residential emoluments.

Applications, stating age, qualifications, experience and nationality, to the Hospital Secretary.

HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. ORTHOPÆDIC REGISTRAR required for this group of hospitals. Work involves sessions at Harefield, Mount Vernon and Northwood, Pinner and District Hospitals together with 3 sessions at St. Vincent's Orthopædic Hospital.

Application forms obtainable from and returnable to the Group Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 19th July, 1958.

HASLEMERE AND DISTRICT HOSPITAL. (83 Beds.) GUILDFORD GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of SENIOR HOUSE OFFICER (surgical with charge of 12 acute medical beds). Duties to commence 10th September, 1958. Valuable experience in general and emergency surgery, orthopædic, E.N.T., gynæcological, children and casualty work. Cottage available October.

Applications to Hospital Secretary, Haslemere and District Hospital, Haslemere, Surrey, by 12th July, 1958, with names of 3 referees.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) Locum HOUSE SURGEON required. Pre-registration or Senior House Officer, according to experience.

Apply to Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON. Pre-registration post for general surgery and urology required at this acute hospital (surgical) immediately.

Applications, with names of 2 referees, to Administrator.

HASTINGS. ST. HELEN'S HOSPITAL. (493 Beds.) HOUSE SURGEON required. Pre-registration post recognised for F.R.C.S. Staff of 5. Vacant now.

Applications immediately to Hospital Administrator.

HAYLE, CORNWALL. ST. MICHAEL'S HOSPITAL. Applications are invited for the post of RESIDENT MEDICAL OFFICER, vacant now (unexpectedly). There are acute medical, surgical and gynæcological beds under consultant supervision. (70 Beds.) Salary £750–£50–£850 p.a., plus unfurnished modern detached house.

Applications, naming 2 referees, should be sent to the Hospital Secretary.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. 2 HOUSE SURGEONS (pre-registration) required.

Applications, giving full details and 2 names for reference, should be sent to the Hospital Secretary as soon as possible.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. Locum Tenens SENIOR HOUSE OFFICER (pædiatrics) required for period 12th–26th July (inclusive).

Applications, together with copies of 2 recent testimonials, should be sent to the Hospital Secretary as soon as possible.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of RESIDENT HOUSE PHYSICIAN (Male or Female), second post held. Recognised pre-registration post. Preference given to applicants who have held resident surgical or medical posts in general hospital. Duties to commence 1st August, 1958.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general surgery, gynæcology and obstetrics) (first or second post). To commence as soon as possible. Pre-registration post; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general, first or second post) to commence as soon as possible. Pre-registration post; recognised under F.R.C.S. regulations. Applications will also be considered from fully registered practitioners.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. HOUSE SURGEON (resident) for duty with Accident Service and as Orthopædic House Surgeon, required 4th July. Recognised as pre-registration post.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to Medical Administrator, Lister Hospital.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. RESIDENT HOUSE PHYSICIAN now required. Recognised as pre-registration post.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital.

HIGH WYCOMBE, BUCKINGHAMSHIRE. WAR MEMO-RIAL HOSPITAL. (100 Beds.) Pre-registration HOUSE PHYSICIAN required for 6 months. Post vacant 21st July.

Apply immediately, with names of 2 referees, to Secretary.

HIGH WYCOMBE, BUCKINGHAMSHIRE. WAR MEMO-RIAL HOSPITAL. (100 Beds.) Pre-registration or post-registration HOUSE OFFICER required for 6 months for General Surgery and Orthopædics.

Apply immediately, with names of 2 referees, to the Secretary.

HIGH WYCOMBE, BUCKINGHAMSHIRE. WAR MEMORIAL HOSPITAL. GENERAL AND E.N.T. HOUSE SURGEON required. Married accommodation available.

Apply to Secretary.

HIGH WYCOMBE, BUCKINGHAMSHIRE. WAR MEMORIAL HOSPITAL. (100 Beds.) SENIOR RESIDENT HOUSE PHYSICIAN required. Post vacant 13th July.

Apply immediately, with copies of testimonials or names of 2 referees, to the Secretary.

HORNCHURCH. ST. GEORGE'S HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (resident) required from approximately 1st September next at this Hospital which accommodates 404 chronic sick patients. The post offers excellent geriatric experience.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

HUDDERSFIELD. MILL HILL HOSPITAL. (164 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer grade, £852 10s.–£55–£1182 10s. p.a.) at above Hospital. The present allocation of beds is 28 for infectious diseases and 136 for geriatric patients.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Group Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered medical practitioners for the post of HOUSE PHYSICIAN to commence duties on 1st July, 1958. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Group Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty on 6th August, 1958. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with national scales.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD. ST. LUKE'S HOSPITAL. (235 Beds.) Applications are invited for the post of RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer grade) at the above Hospital, to commence duties on 7th August, 1958. The Group Geriatric Admission Unit is based on this Hospital, which also caters for acute medical and surgical, paediatric, and maternity patients. Salary in accordance with the terms and conditions of service for hospital medical and dental staff, £852 10s.–£55–£1182 10s. p.a. House available for married candidate.

Applications, together with copies of 3 recent testimonials, to be sent to the undersigned as soon as possible.

H. J. JOHNSON, Group Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (419 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT HOUSE PHYSICIAN (pre-registration post). Vacant mid-July.

Applications, with 2 recent testimonials, to the Hospital Secretary.

HUNTINGDON COUNTY HOSPITAL. Applications are invited for the post of HOUSE OFFICER (surgical) now vacant. Post recognised for pre-registration purposes.

Apply, with full particulars and names of 2 referees, to Secretary, County Hospital, Huntingdon.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue, ILFORD, ESSEX. There will be a vacancy for a HOUSE PHYSICIAN at above Hospital on 6th August, 1958. First or second post; pre-registration. The post will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital.

IPSWICH AND EAST SUFFOLK HOSPITAL (Anglesea-ROAD WING). (356 Beds.) Applications invited for post of HOUSE SURGEON to Consultant General Surgeon, vacant 28th July, 1958. Post recognised for pre-registration and F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Locum Tenens REGISTRAR for Department of Anaesthetics from 18th August to 22nd December, 1958.

Application forms obtainable from and returnable to Medical Director, West Middlesex Hospital, Isleworth, Middlesex, by 8th July.

KETTERING AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER to the Geriatric Unit in this area. There are 160 active beds in the unit in 3 hospitals. Post vacant 14th August, 1958. Residential accommodation available. National scale of salary.

Applications, together with the names and addresses of 2 referees, to the Group Secretary, Central Administration Offices, General Hospital, Kettering.

KILMARNOCK INFIRMARY. (147 Beds.) House Officer (medical)—2 posts, vacant 1st August. Wide experience under Consultant supervision. Resident. National terms.

Apply immediately Area Medical Superintendent, 1, Hill-street, Kilmarnock (Telephone: Kilmarnock 1300).

KING'S LYNN. WEST NORFOLK AND KING'S LYNN GENERAL HOSPITAL. (146 Beds.) Applications are invited for the post of HOUSE OFFICER (medicine) (recognised for pre-registration). Appointment will be for 6 months in the first instance. Post vacant end of July. 9 residents employed. The post offers valuable experience in acute medical, ophthalmic and chest work.

Applications, with names and addresses of 2 referees, to be forwarded to the Group Secretary, King's Lynn Area Hospitals Management Committee, St. James' Hospital, Extons-road, King's Lynn, Norfolk.

KINGSTON HOSPITAL. Applications are invited from suitably qualified and experienced medical officers for the post of Full-time MEDICAL REGISTRAR (2 posts, one of which is available on 1st November, 1958, and the other on 8th December, 1958). The successful candidates may be either resident or non-resident. If non-resident, will be expected to occupy a duty room when on duty, unless living very near to the Hospital.

Forms of application are obtainable from the Group Secretary, Kingston Group Hospital Management Committee, 35, Coombe-road, Kingston upon Thames, and should be returned to him within 14 days of the appearance of this advertisement.

LANCASTER. ROYAL LANCASTER INFIRMARY. (240 Beds.) RESIDENT HOUSE OFFICER (medical) (pre-registration post). Duties include care of acute cases under the supervision of 2 Consultant Physicians and attendance at consultative clinics. Post vacant July, and tenable for 6 months.

Applications, with names of 2 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

LANCASTER. ROYAL LANCASTER INFIRMARY (240 Beds.) RESIDENT HOUSE OFFICER (surgical) (pre-registration post). Successful applicant will work with Consultant Surgical Unit and attend Consultative Clinics. Post vacant July, and tenable for 6 months. Recognised for F.R.C.S.

Applications, with names of 2 referees, to Group Secretary, Royal Lancaster Infirmary, Lancaster.

LEEDS. UNITED LEEDS HOSPITALS/LEEDS REG-IONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Psychiatry associated with the Leeds University Department of Psychiatry. The successful candidate will undertake duties in connection with the clinical, teaching and research work of the Department at the General Infirmary and St. James's Hospital, Leeds. Candidates should hold high medical qualifications and a Diploma in Psychological Medicine or equivalent.

Applications stating age, qualifications and details of appointments held showing dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 9th July, 1958.

LEEDS (near). WOODLANDS ORTHOPÆDIC HOS-PITAL, RAWDON, near LEEDS. (112 Beds.) SENIOR HOUSE OFFICER (resident) required. Post vacant 1st October, 1958.

Applications, stating age and experience, with copies of 2 testimonials, to the Secretary, The Royal Infirmary, Bradford, 9, Yorkshire.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anaesthetics

(*a*) Duties in Leeds A and B Groups. Recognised for F.F.A.R.C.S. and D.A. Resident or non-resident.

(*b*) York A and Tadcaster Group. Approximately 375 Beds in the surgical specialties. Non-resident.

General Medicine

Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions), and Rheumatic Clinic, General Infirmary, Leeds (2 sessions). Resident at the Royal Bath Hospital, Harrogate.

Obstetrics and Gynaecology

(*a*) Leeds A Group. Duties to alternate (6-month periods) between St. Mary's Hospital, Leeds (109 obstetric beds), and St. James's Hospital, Leeds (75 obstetric and 52 gynaecological beds). Resident. Recognised for M.R.C.O.G.

(*b*) Halifax General Hospital with additional duties at Halifax Royal Infirmary (108 obstetric and 41 gynaecological beds). Recognised for M.R.C.O.G. Resident.

Otolaryngology

York County and City Hospitals (28 E.N.T. beds). Resident or non-resident.

Psychiatry

(*a*) Menston Hospital, near Ilkley (2500 Beds). Resident.

(*b*) Meanwood Park Hospital (Mental Deficiency), Leeds (800 Beds). Accommodation available for single person.

If desired facilities for attendance at the Leeds University will be provided if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 9th July, 1958.

LEEDS REGIONAL HOSPITAL BOARD. Senior REGISTRAR vacancies.

Anaesthetics

Hull A Group of hospitals with additional duties as required in the Hull B and East Riding Groups. Non-resident.

Psychiatry

St. James's Hospital, Leeds (General Hospital Psychiatric Unit). Candidates must hold the D.P.M. or equivalent qualification. This appointment offers excellent opportunity for experience in dealing with neurosis. The work will be in association with the University Department of Psychiatry; research and teaching may be undertaken.

Applications stating age, qualifications and details of appointments held showing dates, together with the names and addresses of 3 referees, should be forwarded to the Secretary, Park-parade, Harrogate, by 9th July, 1958.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

Huddersfield Group (approximately 225 Beds in the surgical specialties). Non-resident.

General Surgery

Hull Royal Infirmary (80 general surgical beds) and other hospitals in the Hull A Group including additional duties in the Casualty Department. Non-resident.

Obstetrics and Gynæcology

Hospitals in the Hull A Group (84 obstetric and 91 gynæcological beds). Recognised for M.R.C.O.G. Resident.

Orthopædic Surgery

Woodlands Orthopædic Hospital, Rawdon (100 Beds) and Orthopædic Outpatient Department, Bradford Royal Infirmary. Offers excellent training in all branches of accident and orthopædic surgery. Resident. Detached furnished house available for a married person; also single accommodation available.

Psychiatry

Storthes Hall Hospital, Huddersfield (2750 Beds). Facilities for attendance at the Leeds University will be provided if the successful candidate is studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments, with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 2nd July, 1958.

LEICESTER ROYAL INFIRMARY. Locum Senior HOUSE OFFICER (obstetrics and gynæcology) required 16th August–2nd September inclusive.

Applications, giving details, &c., to Group Secretary, Leicester No. 1 Hospital Management Committee, The Leicester Royal Infirmary, immediately.

LINCOLN COUNTY HOSPITAL, Sewell-road, Lincoln. (200 Beds.) Applications are invited from Men and Women for the post of RESIDENT HOUSE PHYSICIAN. This is an approved pre-registration post. The vacancy will occur on 2nd August, 1958.

Applications, with copy testimonials, should be sent to the Group Secretary, Lincoln County Hospital as soon as possible.

LINCOLN COUNTY HOSPITAL, Sewell-road, Lincoln. (200 Beds.) Applications are invited from Men and Women for 2 posts of RESIDENT HOUSE SURGEON. These are approved pre-registration posts which will be vacant on 1st August, 1958. The duties are with General Surgeons. If satisfactory candidates will be appointed for a second 6 months as House Physicians.

Applications, with copy testimonials, should be sent to the Group Secretary, Lincoln County Hospital, as soon as possible.

LIVERPOOL. NEWSHAM GENERAL HOSPITAL, Belmont-road, LIVERPOOL, 6. Applications are invited for the following appointments tenable from September and which may be resident or non-resident :—

4 HOUSE PHYSICIANS (pre-registration) or SENIOR HOUSE OFFICERS. Grading according to qualifications and experience.

1 SENIOR HOUSE OFFICER (dermatology).

Salaries: Senior House Officer £819 10s. p.a., less £150 p.a. if resident. House Physicians £467 10s.–£522 10.–£577 10s., according to experience, less £125 p.a. if resident.

Applications to be forwarded to the Physician-Superintendent at the Hospital as soon as possible.

LOUTH, LINCOLNSHIRE. COUNTY HOSPITAL. (215 Beds.) GRIMSBY HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (medical) vacant 1st August, 1958, at this busy General Hospital.

Applications, with full details, together with names of 2 referees, should be addressed to the Hospital Secretary.

LUTON AND DUNSTABLE HOSPITAL. Children's ANNEXE, LUTON, BEDFORDSHIRE. RESIDENT PÆDIATRIC HOUSE OFFICER required. The post is recognised for the D.C.H. and as a second pre-registration post in medicine. The duties include both medical and surgical wards.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to the Secretary, Luton and Hitchin Group Hospital Management Committee, St. Mary's Hospital, Luton.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. SENIOR HOUSE OFFICER for Accident Service, including duties in the Hand Infection Unit, required for vacancy mid-July. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copes of 3 recent testimonials, to be sent to the Secretary of the above Hospital as soon as possible.

MANCHESTER, 4. ANCOATS HOSPITAL. Applications are invited for the post of a SECOND CASUALTY OFFICER (Senior House Officer) now vacant. The post is recognised for F.R.C.S. Facilities for further study and practice in surgery are available in the Hospital. This is a busy general hospital with a bed complement of 153 comprising general medicine, general surgery, traumatic and orthopædic surgery, and E.N.T. It has a busy outpatient and casualty department with annual attendances at the Casualty Department of 9600.

Applications, with names of 2 referees, by 7th July, 1958, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant in August. Candidates must have held house-appointments, but previous laboratory experience is not essential. Suitable for candidates interested in obstetrics and/or pædiatrics wishing to obtain laboratory experience. The duties will be mainly in the Department of Clinical Pathology, Saint Mary's Hospitals, but the holder of the post will also spend some time in the Manchester Royal Infirmary.

Applications to be made on forms obtainable from the undersigned and submitted by 14th July, 1958.

A. R. WISE, General Superintendent.
Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MANCHESTER. BOOTH HALL CHILDREN'S HOSPITAL, BLACKLEY, MANCHESTER, 9. (380 Beds. Recognised for D.C.H.) RESIDENT SENIOR HOUSE OFFICER (surgical). Duties orthopædic and E.N.T. Post vacant 1st August.

Applications, giving names and addresses of 2 referees, to be sent to Group Secretary, from whom further particulars may be obtained.

MANCHESTER. BOOTH HALL CHILDREN'S HOSPITAL, BLACKLEY, MANCHESTER, 9. (380 Beds. Recognised for D.C.H.) HOUSE OFFICER (surgical), pre- or post-registration. Duties mainly general surgery and neurosurgery. Post vacant.

Applications immediately, with usual particulars and copies of 2 recent testimonials, to Group Secretary.

MANCHESTER REGIONAL HOSPITAL BOARD. SHAROE GREEN HOSPITAL, PRESTON. (375 Beds.) REGISTRAR in General Medicine. Post vacant 5th September, 1958.

Application forms obtainable from the Group Secretary, Preston and Chorley Hospital Management Committee, Royal Infirmary, Preston, Lancs.

MANCHESTER REGIONAL HOSPITAL BOARD. North AND MID-CHESHIRE GROUP OF HOSPITALS. ALTRINCHAM GENERAL HOSPITAL AND ANNEXE, near MANCHESTER. (130 Beds. Recognised under F.R.C.S. regulations.) Applications are invited for the post of SURGICAL REGISTRAR, vacant middle of August. This appointment, in a busy general hospital, with duties at other hospitals in the Group, offers excellent opportunities of practical surgical experience to suitably qualified candidates.

Applications, together with 2 recent testimonials, to be sent to the Group Secretary, North and Mid-Cheshire Hospital Management Committee, Sinderland-road, Altrincham, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD. 2 posts of SENIOR REGISTRAR in Radiology as follows :—

(*a*) North Manchester Group of hospitals (Crumpsall, Ancoats, Manchester Northern and Victoria Memorial Jewish Hospitals) and Booth Hall (Children's) Hospital, Manchester.

(*b*) Salford Group of hospitals, mainly at Salford Royal Hospital, but also including duties at Royal Manchester Children's Hospital and Hope Hospital, Salford.

The posts are included in the rotation scheme organised by the Board and the Board of Governors of the United Manchester Hospitals, and it is expected that the appointees to these posts will undertake a period of training at the Manchester Royal Infirmary or other hospital in the Teaching Group.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by 16th July, 1958.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to the Geriatric Department. Resident or non-resident. Duties are primarily in the active medical wards. Excellent experience is available in the unit which has been developed on modern lines and has available full general hospital facilities.

Applications, stating age, qualifications, present post, experience, and the names of 2 referees, to be forwarded to the Group Secretary at the Hospital immediately.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (surgical), including casualty duties, vacant on 1st September, 1958. The post, which is normally tenable for 12 months, is recognised by the Royal College of Surgeons for the final F.R.C.S. examination, and possession of the primary F.R.C.S. will be an advantage. The Hospital is recognised by the Manchester University for the teaching of undergraduate students.

Applications, with full details, to the Group Secretary, Withington Hospital, as soon as possible.

MAIDENHEAD HOSPITAL, Berkshire. Applications invited for the post of CASUALTY OFFICER (Senior House Officer grade), vacant 1st July. Post recognised for F.R.C.S.

Applications, stating age, qualifications, experience and nationality, with copies of testimonials or names of 3 referees, to Secretary.

MAIDENHEAD HOSPITAL, Berkshire. Applications invited for post of HOUSE SURGEON, vacant 2nd July. Pre-registration post.

Applications, stating age, qualifications and nationality, with names of 3 referees, to Secretary.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the E.N.T. Department of the above Hospital. Post vacant end of June, 1958. There are 55 E.N.T. beds and 6 specialist operating sessions each week. Valuable experience is available, and the post is recognised for the purpose of the F.R.C.S. and the D.L.O. Salary will be £819 10s. a year, less £150 a year for residential emoluments.

Applications to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Maidstone, Kent.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the Ophthalmic Department of the above Hospital. Post vacant now. The Hospital is recognised by the Examining Board for the F.R.C.S. and the D.O. Salary £819 10s. a year less £150 a year for residential emoluments.

Applications should be forwarded to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Church-street, Maidstone.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON, 6 months' appointment. Vacant now. Recognised for F.R.C.S. Salary at the rate of £467 10s.–£577 10s. p.a. A deduction at the rate of £125 a year is made for board and lodging, and other services provided.

Applications should be forwarded, as soon as possible, to the Administrative Officer at the Hospital.

MANSFIELD (near), NOTTINGHAMSHIRE. HARLOW WOOD ORTHOPÆDIC HOSPITAL. (328 Beds. Recognised for F.R.C.S. examination.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (orthopædics) required. Successful candidate will be attached to the Hand Service Unit. Post also offers long-term training in orthopædics and traumatic surgery. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, by 7th July, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

MEXBOROUGH. MONTAGU HOSPITAL AND ANNEXE. (198 Beds.) Locum SENIOR HOUSE OFFICER (casualty and orthopædics). £150 p.a. residential emoluments.

Applications to the Secretary to the Committee, Fern Bank, Doncaster-road, Rotherham.

MIDDLESBROUGH (near). HEMLINGTON HOSPITAL. SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (surgery) at the above Hospital. The appointment is recognised for the F.R.C.S. examinations. The Hospital does not have a casualty department.

Applications, stating age, qualifications, and names for reference, to be forwarded to the Hospital Secretary.

MIDDLESBROUGH (near). HEMLINGTON HOSPITAL. (274 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN at the above Hospital. The post is recognised for pre-registration service under the Medical Act, 1950, and the medical unit consists of 60 Beds. The Hospital is situated in a rural area within easy reach of Middlesbrough.

Applications, stating age, qualifications and experience, together with 2 names for reference, should be addressed to the Hospital Secretary, Hemlington Hospital, Middlesbrough.

MIDDLESBROUGH GENERAL HOSPITAL, Ayresome Green-lane, MIDDLESBROUGH. (305 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (orthopædics) at the above Hospital. The post is recognised for the F.R.C.S. examination and includes some duties in the Casualty Department, which is under the supervision of a full-time Senior Casualty Officer.

Applications, stating age, qualifications and experience, together with the names of referees, should be sent to the Hospital Secretary.

MIDDLESBROUGH GENERAL HOSPITAL, Ayresome Green-lane, MIDDLESBROUGH. (305 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (surgery) at the above Hospital. The appointment is recognised for the F.R.C.S. examination and will include some duties in the Casualty Department, which is under the supervision of a full-time Senior Casualty Officer.

Applications, stating age, qualifications and experience, together with the names of 2 referees, should be sent to the Hospital Secretary as soon as possible.

MORECAMBE. QUEEN VICTORIA HOSPITAL. RESIDENT SENIOR HOUSE OFFICER (surgical). The post is normally tenable 1 year and the successful applicant will be attached to the specialist surgical unit.

Applications, with names of 2 referees, to be addressed to the Group Secretary, Royal Lancaster Infirmary, Lancaster.

NEWARK GENERAL HOSPITAL. Nottingham No. 1 HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER (medical) required for above Hospital situated on Great North-road, approximately 20 miles from Nottingham. Post offers good experience. Consultant staff attending Newark Hospital are on 1 or more of the Nottingham Hospitals. Flat available as married quarters. Salary and conditions of service in accordance with Ministry regulations. Duties to commence as soon as possible.

Applications, giving names of 3 referees, should be sent to Group Secretary, Nottingham No. 1 Hospital Management Committee, General Hospital, Nottingham.

NEWCASTLE REGIONAL HOSPITAL BOARD. Registrar PHYSICIAN, whole-time, for Durham Group of hospitals—main hospital, Dryburn (309 Beds); single accommodation available or furnished house if required.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 14 days.

NEWCASTLE REGIONAL HOSPITAL BOARD. REGISTRAR PSYCHIATRIST, whole-time, resident, St. Nicholas Hospital, Gosforth, Newcastle upon Tyne (1190 Beds). Accommodation available. Good experience and training in psychiatry offered. Facilities are available for the appointee to take the Durham University D.P.M. course. Further particulars from the Regional Psychiatrist.

Applications, with names and addresses of 3 referees, to Regional Psychiatrist, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 14 days.

NEWCASTLE. THE UNITED NEWCASTLE UPON TYNE HOSPITALS. Applications are invited for the non-resident appointment of SENIOR HOUSE OFFICER in the Department of Psychological Medicine. The successful candidate will have opportunity for clinical experience in inpatient and outpatient work under the direction of the head of the department and he will also be responsible for emergency duty as required. Facilities are given to take the Durham D.P.M. course. The appointment is for 1 year and will be subject to the terms and conditions of service of hospital medical staff in the National Health Service.

Applications, giving full details and the names and addresses of 3 referees, should be sent to the undersigned within 2 weeks of the appearance of this advertisement.

A. W. SANDERSON, House Governor and Secretary.
Royal Victoria Infirmary, Newcastle upon Tyne.

NEWMARKET GENERAL HOSPITAL, Suffolk. Applications are invited for the post of HOUSE PHYSICIAN now vacant. Duties include house charge of general medical and pulmonary tuberculosis beds. The post is recognised for pre-registration, is resident and tenable for 6 months. Salary in accordance with national scale.

Applications, with 3 recent testimonials, to Medical Superintendent.

NOTTINGHAM CITY HOSPITAL. (811 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Department of Thoracic Surgery. Post vacant 1st July, 1958. Salary £819 10s. p.a. less £150 for residential emoluments. The appointment will be for 1 year.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM CITY HOSPITAL. (811 Beds. Recognised for training for M.R.C.O.G.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (obstetrics and gynæcology) required for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th July, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM GENERAL HOSPITAL. Resident Pre-registration HOUSE SURGEONS required. Posts vacant June and July.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (orthopædic and fracture) required. Duties to commence about 18th July, 1958. Post offers exceptional experience in traumatic surgery.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (surgery) required. Duties to commence 26th July, 1958.

Applications, stating age, qualifications, experience and nationality, together with copies of testimonials, to be sent to Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Resident Pre-registration HOUSE PHYSICIANS required. Posts vacant June and July. LOCUM required immediately.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (casualty), duties to commence about 26th July. Establishment 3. Recognised for F.R.C.S. Post offers wide experience of casualty work.

Applications stating age, nationality, qualifications and experience, together with copies of testimonials, to be sent to the Secretary, General Hospital, Nottingham.

ORPINGTON HOSPITAL, Kent. Pre-registration HOUSE SURGEON for Orthopædic and E.N.T. post now vacant. Offers good experience in large general hospital pleasantly situated within easy reach of London.

Apply immediately to Surgeon-Superintendent (Orpington 27050).

OXFORD REGIONAL HOSPITAL BOARD. Registrar in Anæsthetics to the Banbury hospitals. Vacant shortly. Recognised for the F.F.A. R.C.S. The appointment is for 1 year in the first instance and eligible for extension to a second year.

Applications, on forms obtainable from the Secretary, Registrar Committee, 43, Banbury-road, Oxford, should reach him by 16th July.

PLYMOUTH. MOUNT GOLD ORTHOPÆDIC HOS-PITAL. Applications are invited for the post of SENIOR HOUSE OFFICER for the Orthopædic and Fracture Service, centring on Mount Gold Orthopædic and Associated Hospitals. Post recognised by R.C.S. Accommodation for married man may be available.

Applications, stating age, qualifications with dates, &c., and with copies of 2 recent testimonials, to be forwarded to the Secretary, Mount Gold Hospital, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

HOUSE SURGEONS, pre-registration posts, vacancies 1st and 23rd June, and 1st July, 1958. Recognised for the F.R.C.S. Greenbank Road Hospital.

In all cases send names of 3 referees and addresses, also state age, nationality, qualifications and experience to Group Secretary, 7, Nelson-gardens, Devonport.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, Greenbank-road. SENIOR HOUSE OFFICER in Surgery, vacant 8th August, 1958. Recognised for the F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with names of 3 referees, to be sent to the Group Secretary.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, FREEDOM FIELDS. Central Casualty Department. RESIDENT SENIOR HOUSE OFFICER in Casualty, vacant immediately. Recognised for the F.R.C.S.

Applications, with names of 3 referees, to be sent to the Group Secretary.

PLYMOUTH. THE SCOTT ISOLATION HOSPITAL. HOUSE OFFICER (third appointment) required for duty in general medical wards at the above Hospital. Immediate vacancy.

Applications, to include full details and names of 2 referees, to be sent to Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth, as soon as possible.

PONTYPRIDD AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE.

East Glamorgan Hospital, Church Village, near Pontypridd (336 Beds and large Outpatient Department. Committee's Base Hospital serving population of 174,000. Recognised for D.Obst.R.C.O.G., F.R.C.S., D.C.H., F.F.A.R.C.S., D.A.)

SENIOR HOUSE OFFICER (medicine), to commence 1st August, 1958.

SENIOR HOUSE OFFICER (obstetrics and gynæcology), to commence 1st August, 1958.

SENIOR HOUSE OFFICER (pædiatrics), to commence 1st August, 1958.

SENIOR HOUSE OFFICER (pathology), to commence immediately.

SENIOR HOUSE OFFICER (anæsthetics), to commence 15th August, 1958.

Llwynypia Hospital, Llwynypia, Rhondda (200 Beds including acute medical and chronic sick beds, serving area population of 112,000)

SENIOR HOUSE OFFICER (medicine), to commence 1st August, 1958. Person appointed to this vacancy will also be required to undertake duties at the Glyncornel Hospital and have part responsibility for the Group Infectious Diseases Hospital.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

POOLE GENERAL HOSPITAL, Poole, Dorset. Bournemouth and East Dorset Hospital Management Committee Locum CASUALTY OFFICER (Senior House Officer) required for a fortnight from 21st July, 1958. No weekend duties.

Applications to the Hospital Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Queen Alexandra Hospital

SENIOR HOUSE OFFICER, General Medicine and Dermatology. Vacant, 1st July, 1958.

Surgery (87 surgical beds)

HOUSE OFFICER (pre-registration). Vacant 24th August, 1958.

Royal Portsmouth Hospital

Surgery (70 surgical beds)

HOUSE OFFICER (pre-registration). Vacant 1st July, 1958.

Orthopædic (104 orthopædic beds)

SENIOR HOUSE OFFICER. Vacant 2nd August, 1958.

HOUSE OFFICER (pre-registration). Vacant 14th July, 1958.

Pædiatric and Medical (30 beds)

HOUSE OFFICER (pre-registration). Vacant 12th August, 1958.

Saint Mary's Hospital

Surgery (120 surgical beds)

HOUSE OFFICERS (3) (pre-registration). Vacant 28th June, 1958, 9th August, 1958, and 12th August, 1958.

Infectious Diseases Hospital

SENIOR HOUSE OFFICER for 12 months or Locum required with duties also on the tuberculosis wards and the Poliomyelitis Diagnostic and Respiratory Centre. Vacant immediately.

Applications, stating age, experience and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. Hurst, St. Mary's Hospital, Milton-road, Portsmouth.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of Locum ANÆSTHETIC REGISTRAR in the Portsmouth Group of hospitals for the holiday period 3 months from the beginning of July, 1958.

Applications should be sent immediately to the Group Secretary, Portsmouth Group Hospital Management Committee, Saint Mary's Hospital, Milton-road, Portsmouth.

PRESTON. ROYAL INFIRMARY. (400 Beds.) Senior HOUSE OFFICER in Neurosurgery. Recognised for F.R.C.S. Vacant 1st August.

Applications, with names of 2 referees, to Group Secretary, Preston and Chorley Hospital Management Committee, Royal Infirmary, Preston, Lancs.

READING. BATTLE HOSPITAL. (391 Beds.) Reading and District Hospital Management Committee. Applications are invited from registered medical practitioners for the post of RESIDENT JUNIOR HOUSE SURGEON (pre- or post-registration) required in the Accident and Orthopædic Department. F.R.C.S. recognised. Also casualty duties. Vacant immediately.

Apply, stating age, qualifications with dates, nationality, present post, with copy of recent testimonial, to Secretary.

ROTHERHAM HOSPITAL, Doncaster-gate, Rotherham. (161 Beds. Recognised for F.R.C.S. examination.) **Sheffield Regional Hospital Board.** Whole-time RESIDENT SURGICAL REGISTRAR required, 3rd September. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th July, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

ROTHERHAM HOSPITAL, Doncaster-gate, Rotherham. (161 Beds. Recognised for F.R.C.S. examination.) **Sheffield Regional Hospital Board.** Whole-time RESIDENT REGISTRAR (orthopædics and casualty) required 2nd September. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 7th July, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

ROTHERHAM. MOORGATE GENERAL HOSPITAL. (342 Beds, 38 Cots.) Locum SENIOR HOUSE OFFICER (surgery) required.

Applications, stating qualifications, experience, and names of 3 referees, to Secretary to Committee, Fern Bank, Doncaster-road, Rotherham.

REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road, Redhill, Surrey. RESIDENT HOUSE SURGEON (Male). Pre-registration appointment vacant immediately. Opportunity of House Physician's post to follow if required.

Applications to Hospital Secretary.

RHYL. ROYAL ALEXANDRA HOSPITAL. (138 Beds.) Applications are invited from pre-registration or registered medical practitioners for the post of HOUSE PHYSICIAN at the above Hospital. Post vacant 1st August, 1958. Tenable for 6 months.

Applications, together with copies of 2 testimonials, to be sent forthwith to the Group Secretary, Clwyd and Deeside Hospital Management Committee, "Rhianfa", Russell-road, Rhyl.

RHYL. ROYAL ALEXANDRA HOSPITAL. (138 Beds.) Applications are invited from pre-registration or registered medical practitioners for the post of HOUSE SURGEON. Post tenable for 6 months as from 1st September, 1958. Recognised for F.R.C.S.

Applications, with 2 testimonials, to be sent forthwith to the Group Secretary, Clwyd and Deeside Hospital Management Committee, "Rhianfa," Russell-road, Rhyl.

ROCHDALE AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIANS required at Birch Hill Hospital. 2 resident posts available in July.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHESTER, KENT. ST. BARTHOLOMEW'S HOSPITAL. (Recognised for the F.R.C.S.) **Medway and Gravesend Hospital Management Committee.** HOUSE SURGEON. Applications are invited for this pre-registration post in general surgery, vacant from beginning of July. If held by a registered practitioner, post will be limited to 6 months. Salary £467 10s.–£577 10s. p.a., according to experience.

Applications, stating age, qualifications, nationality and experience, to be addressed to the Hospital Secretary.

ROCHESTER, KENT. ST. BARTHOLOMEW'S HOSPITAL. Medway and Gravesend Hospital Management Committee. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer grade). 1 of 2 in the department. Post vacant now and tenable for 6 months or 1 year. Recognised for F.R.C.S. Salary £819 10s. p.a.

Applications, stating age, nationality, qualifications and experience, with recent testimonials, to Hospital Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (620 Beds.) Locum SENIOR HOUSE OFFICER (general medicine) required from 17th July to 2nd August, 1958, inclusive.

Applications immediately to the Secretary.

ROCHFORD. GENERAL HOSPITAL. Locum Registrar required in the large Obstetric and Gynæcological Unit at the above Hospital for the period 18th July–10th August, 1958.

Applications immediately to the Secretary, Management Committee Offices, General Hospital, Rochford, Essex.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. (722 Beds.) ORTHOPÆDIC HOUSE SURGEON (resident) required in the Orthopædic and Accident Unit. The service consists of 100 Beds equally divided between traumatic surgery and "cold" orthopædics. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications to be sent to Group Secretary, Romford Hospital Management Committee, Oldchurch Hospital, as soon as possible.

ROMFORD, ESSEX. OLDCHURCH HOSPITAL. Locum SENIOR HOUSE OFFICER required in Casualty Department for 3 weeks from 7th to 27th July, 1958.

Apply by letter or telephone to Medical Superintendent. Telephone: Romford 46090.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. Locum SENIOR HOUSE OFFICER in General Surgery required for period of 2 weeks from 8th to 22nd September next for busy surgical unit of 120 Beds.

Apply by letter or telephone to Medical Superintendent. Telephone: Romford 46066.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE OFFICER (general surgery) required from 7th July, 1958. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent stating also names of 2 referees.

RYDE. ROYAL I.W. COUNTY HOSPITAL. Isle of Wight Group Hospital Management Committee. HOUSE PHYSICIAN required (pre-registration post). Vacant 1st August, 1958.

Applications, with names of 2 referees, to Hospital Secretary not later than 12th July.

SALFORD. HOPE HOSPITAL. Salford Hospital Management Committee. Applications are invited for the post of PÆDIATRIC SENIOR HOUSE OFFICER for a period of 12 months. Post recognised for the D.C.H. Vacant 3rd August, 1958. The department comprises 104 Beds, including medical, and surgical wards, infants wards and Outpatient Department. The pædiatric staff supervise the neonatal nurseries of the Obstetrical Department (approximately 70 lying-in beds).

Applications also invited for the post of PÆDIATRIC HOUSE OFFICER (post-registration) which becomes vacant on 27th July, 1958. The post is recognised for the D.C.H.

Applications, stating age, qualifications and experience, together with the names and addresses of 2 referees, to be forwarded to the Hospital Secretary forthwith.

SALISBURY GENERAL HOSPITAL. Salisbury Group Hospital Management Committee, South West Metropolitan Regional Hospital Board. Applications are invited for the appointment of REGISTRAR to the Orthopædic Department, with effect from 1st October. The post is recognised under fellowship regulations and offers wide practical experience in traumatic and general orthopædics, including children.

Application forms may be obtained from, and must be returned to, Group Secretary, Odstock Hospital, Salisbury, by 9th July.

SALISBURY GENERAL HOSPITAL. Applications are invited for the post of SENIOR RESIDENT HOUSE SURGEON or RESIDENT HOUSE SURGEON, vacant 11th September. Appointment recognised for pre-registration candidates, and also Fellowship regulations. Department has over 50 Beds and large outpatient turnover, dealing with fractures and all types of orthopædic surgery.

Applications, stating age, nationality, qualifications and experience, and naming 2 referees, to the Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/HOUSE PHYSICIAN to run consecutively in this order for a period of 6 months in each post from 19th August. Posts open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of DENTAL REGISTRAR (resident) to the Plastic and Oral Surgery Centre at Odstock Hospital. Post vacant 1st November, 1958, and is approved for the Dental Fellowship. Candidates may visit the Unit by appointment.

Application forms, obtainable from the Group Secretary, Odstock Hospital, Salisbury, should be returned by 26th July, 1958.

SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the post of REGISTRAR ANÆSTHETIST (resident or non-resident) at Salisbury General Hospital, which is recognised for F.F.A. R.C.S. Post vacant 4th October.

Further details and application forms obtainable from, and should be returned to, Group Secretary, Odstock Hospital, Salisbury, Wilts, by 9th July.

SALISBURY GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of RESIDENT MEDICAL OFFICER/PÆDIATRIC REGISTRAR at Odstock Hospital for a period of 12 months in the first instance from 17th October, 1958.

Application forms may be obtained from, and must be returned to, the Group Secretary, Odstock Hospital, Salisbury, by 9th July.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR in Radiodiagnosis, Royal Infirmary, Edinburgh, vacant on 1st October, 1958.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 12th July.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. REGISTRAR in Surgery, Leith Hospital.

Apply, giving particulars of age, qualifications and previous experience, and the names of 2 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 19th July.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance:—

SENIOR REGISTRAR in Radiotherapy based at the Western Infirmary, Glasgow.

REGISTRAR in Obstetrics and Gynæcology at the Royal Maternity Hospital and Western Infirmary, Glasgow.

REGISTRAR in Obstetrics and Gynæcology with duties in the first instance at Falkirk and District Royal Infirmary and on a rotational basis at the Victoria Infirmary and Robroyston Hospital, Glasgow.

REGISTRAR in Psychiatry based at Woodilee Mental Hospital, Lenzie, near Glasgow. A small flat is available.

REGISTRAR in Psychiatry based at Bellsdyke Mental Hospital, Larbert.

REGISTRAR in Surgery based at the Western Infirmary, Glasgow, and with duties for a period at the Lewis Hospital, Stornoway.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 12th July, 1958.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (262 Beds.) SCUNTHORPE HOSPITAL MANAGEMENT COMMITTEE. Immediate vacancy for HOUSE SURGEON (pre-registration) or SENIOR HOUSE OFFICER according to experience. Busy Hospital with large surgical turnover.

Apply to Group Secretary, Scunthorpe Hospital Management Committee, War Memorial Hospital, Scunthorpe, naming 2 referees.

SKIPTON (near). GRASSINGTON HOSPITAL. (208 Beds.) SENIOR HOUSE OFFICER required for the above Hospital, which provides treatment for tuberculous patients, men and women. Accommodation available for single applicants.

Applications to Medical Superintendent.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS BOARD OF GOVERNORS and THE SHEFFIELD REGIONAL HOSPITAL BOARD. Reciprocal training scheme for Senior Registrars. Applications invited for the post of SENIOR REGISTRAR in Radiology, with initial tenure in the Department of Radiology at the Royal Infirmary/Royal Hospital, Sheffield. Candidates should hold a Diploma in Diagnostic Radiology. Appointment for 1 year in the first instance and renewable annually thereafter. The successful candidate will be transferred to a regional hospital for the second phase of his appointment in accordance with the arrangements under the reciprocal training scheme. Renewal of appointment and transfer will be subject to satisfactory work and progress.

Applications, stating age, qualifications and experience, with the names of 3 referees, to the Chief Administrative Officer, United Sheffield Hospitals, West-street, Sheffield, 1, not later than 11th July, 1958.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the following posts:—

(*a*) OPHTHALMIC REGISTRAR at the Royal Hospital.

(*b*) REGISTRAR in Clinical Pathology. The successful candidate may be required to work in any of the laboratories of the United Sheffield Hospitals.

Applications for both posts, stating age, qualifications and experience, with the names of 3 referees, should be sent not later than 12th July, 1958, to the Chief Administrative Officer, United Sheffield Hospitals, West-street, Sheffield, 1.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SENIOR HOUSE OFFICER (E.N.T.). Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O.R.C.S. and F.R.C.S. Vacant immediately.

Applications, with copy testimonials, to the Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) HOUSE PHYSICIAN, pre-registration candidates eligible. Vacant 1st August, 1958.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. SHELTON MENTAL HOSPITAL. (1000 Beds.) SHREWSBURY HOSPITAL GROUP. JUNIOR HOSPITAL MEDICAL OFFICER. Appointment for 1 year in first instance. Single residential accommodation available. Recognised for D.P.M. Associated outpatient clinics.

Applications to Medical Superintendent.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. 2 HOUSE SURGEONS required, pre-registration posts, recognised for F.R.C.S., vacant 21st and 29th July.

Applications, with names of 2 referees, to Secretary by 9th July.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. HOUSE PHYSICIAN required for post vacant 29th July. Pre-registration appointment offering considerable experience in general acute medical work.

Applications, with names of 2 referees, to Secretary by 9th July.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum MEDICAL REGISTRAR required 3rd–11th July.

Application, with names of 2 referees, to Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. HOUSE SURGEON required in Department of Obstetrics and Gynæcology to work with part-time Registrar. Post not recognised for D.Obst.R.C.O.G.

Applications, with names of 2 referees, to Secretary.

SOUTHAMPTON GENERAL HOSPITAL. (465 Beds. Recognised for the Membership and Diploma examinations of the R.C.O.G.) RESIDENT HOUSE SURGEON (pre-registration) to the Gynæcological and Obstetric Unit required beginning of August.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTH EAST NORTHUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following pre-registration posts:—

Preston Hospital

1 HOUSE PHYSICIAN.

Tynemouth Victoria Jubilee Infirmary

1 HOUSE PHYSICIAN.

1 HOUSE SURGEON.

Applications, stating names of 2 referees, to Group Secretary, Preston Hospital, North Shields.

SOUTHEND-ON-SEA. GENERAL HOSPITAL. Applications are invited for appointment as SENIOR HOUSE OFFICER to the Orthopædic and Fracture Department. Post vacant 1st August, 1958. The Orthopædic and Fracture Department is the centre for reference of all cases from a large surrounding area, and the post offers excellent experience in all aspects of orthopædic and traumatic surgery under the supervision of and with instructions from the Consultant-in-Charge. Post recognised for the F.R.C.S. Resident or non-resident.

Applications, stating age, qualifications and experience, together with copies of recent testimonials, should be sent to the undersigned by 3rd July, 1958. J. C. FIELD, Secretary.

SOUTHEND-ON-SEA. LANCASTER HOUSE CHEST CLINIC. SOUTHEND-ON-SEA HOSPITAL MANAGEMENT COMMITTEE. Locum SENIOR REGISTRAR required for the whole or part of the period 21st July–8th September, 1958. Previous experience in chest work essential. Accommodation available if required.

Applications immediately to the Secretary, Management Committee Offices, General Hospital, Rochford, Essex.

SOUTHPORT GENERAL INFIRMARY. (189 Beds.)

HOUSE PHYSICIAN (general medicine).

HOUSE PHYSICIAN (general medicine and ophthalmology).

HOUSE SURGEON (general surgery and gynæcology).

Appointments vacant July. House Surgeon post recognised for F.R.C.S.

Apply, stating age, qualifications, nationality, experience, and post required, with 2 copies testimonials, to Group Secretary, Southport, and District Hospital Management Committee, Promenade Hospital, Southport.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) Locum Tenens ANÆSTHETIC REGISTRAR, resident, required for the period 10th August–7th September, 1958, inclusive. Post recognised for F.F.A. R.C.S. and D.A.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. HELENS AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. ST. HELENS HOSPITAL. (196 Beds.) Applications are invited for the post of Locum HOUSE SURGEON for the months of July and August. The appointment will be made in the Senior House Officer grade in the case of persons who have already held 2 pre-registration posts.

Applications, stating age, qualifications and experience, should be forwarded immediately to N. RICHARDS, Group Secretary, Whiston Hospital, Prescot.

ST. ASAPH GENERAL HOSPITAL, Flintshire. (54 obstetric beds.) CLWYD AND DEESIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from pre-registration or registered medical practitioners for the post of JUNIOR HOUSE OFFICER. Recognised for the D.Obst.R.C.O.G. Post vacant 1st August, 1958. Tenable for 6 months. Married quarters available.

Applications, together with 2 testimonials, to be sent immediately to the Group Secretary, Clwyd and Deeside Hospital Management Committee, Rhianfa, Russell-road, Rhyl.

SOUTH WESTERN REGIONAL HOSPITAL BOARD. (Joint appointment with the United Bristol Hospitals.) Applications are invited by the above Boards for the joint appointment of SENIOR REGISTRAR or REGISTRAR in the Department of Neurological Surgery, Frenchay Hospital, Bristol. The appointment will be held for 1 year in the first instance but may be renewed thereafter on an annual basis.

Applications, stating date of birth, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary of the Regional Hospital Board, 27, Tyndalls Park-road, Bristol, 8.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—Recovery Unit 32 Beds.) HOUSE SURGEON. Pre-registration post. Vacant 9th July. At end of service the successful applicant will be considered for appointment to a pre-registration post of House Physician if he or she has not held such an appointment.

Applications to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STOCKPORT AND BUXTON HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following pre-registration posts:—

Stockport Infirmary (163 Beds)
HOUSE OFFICER (surgery), vacant now. Recognised for the F.R.C.S.

Stepping Hill Hospital (529 Beds)
HOUSE OFFICER (medicine). Vacant 31st July, 1958.
HOUSE OFFICER (medicine). Vacant 21st August, 1958.
HOUSE OFFICER (obstetrics). Vacant 1st September, 1958.
Recognised for the D.Obst.R.C.O.G.

Applications, with full particulars and copies of 2 testimonials, to the Group Secretary, 59B, Shaw-heath, Stockport.

STOCKPORT INFIRMARY. (163 Beds.) Applications are invited for the post of HOUSE OFFICER or SENIOR HOUSE OFFICER (medicine). Vacant 8th July, 1958.

Applications, stating age, experience and qualifications, together with copies of 2 testimonials, to be addressed to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

STOCKPORT. STEPPING HILL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (obstetrics and gynæcology) vacant now. The post is recognised for the D.Obst.R.C.O.G.

Applications, with full particulars and copies of 2 recent testimonials, to the Secretary, Stockport and Buxton Hospital Management Committee, 59B, Shaw-heath, Stockport.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Applications invited for HOUSE OFFICER (medical), vacant early July. Recognised pre-registration post.

Detailed applications to the Secretary at the Hospital.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE PHYSICIAN (pædiatrics) required. Post vacant very shortly. Pre-registration. Hospital recognised for D.C.H.

Detailed applications, with copy testimonials, to Hospital Secretary.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (815 Beds.) 2 combined pre-registration house appointments tenable for 12 months. (HOUSE PHYSICIAN—HOUSE SURGEON.) 6 months as House Surgeon to a Consultant General and Thoracic Surgeon and 6 months as House Physician to 2 Consultant Physicians. Work includes general medicine, cardiology, general surgery, thoracic and cardiac surgery. No casualty work. Recognised for F.R.C.S.

Applications to Hospital Secretary.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. (685 Beds.) RESIDENT SENIOR HOUSE PHYSICIAN (pædiatrics) required. (Senior House Officer grade.) Post vacant mid-June, 12 months' appointment. Post recognised for D.C.H.

Applications, with copy testimonials, to Hospital Secretary, as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE PHYSICIAN required. Pre-registration post vacant shortly.

Detailed applications with copy testimonials to Hospital Secretary, North Staffordshire Royal Infirmary, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. SENIOR HOUSE OFFICER (anæsthetics) required. Post recognised for F.F.A. R.C.S. and D.A. Medical library facilities available.

Detailed applications to Hospital Secretary as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general surgery) required. Recognised for F.R.C.S. Post vacant very shortly.

Detailed applications, with copy testimonials, to Hospital Secretary, North Staffordshire Royal Infirmary, Stoke-on-Trent.

SWANSEA HOSPITAL, Swansea. (413 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER in the Traumatic and Orthopædic Department of the above Hospital. The post is recognised under the F.R.C.S. regulations for 6 months' casualty training. It offers exceptional experience in all aspects of traumatic surgery as occurring in a large industrial centre and port.

Applications, stating age and experience together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary. T. E. JONES, Group Secretary.

SWANSEA. MOUNT PLEASANT HOSPITAL. (240 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER in obstetrics for the maternity unit of 40 Beds at the above Hospital. The post, which will become vacant on 12th August, 1958, is for a period of 12 months and is recognised for the D.Obst.R.C.O.G. examination.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, should be sent to the Hospital Secretary not later than 7th July, 1958.

T. E. JONES, Group Secretary.

STONE, BUCKINGHAMSHIRE. ST. JOHN'S HOSPITAL. ST. JOHN'S AND MANOR HOUSE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER at this Mental Hospital. Facilities for training in psychiatry are available. Previous experience in psychiatry is not necessary.

Applications, giving full details and the names of 2 referees, should be addressed to the Physician-Superintendent.

SULLY HOSPITAL, Sully, Glamorganshire. (Thoracic centre of 324 Beds.) SENIOR HOUSE OFFICER (surgical). Applicants primarily interested in general surgery considered. Experience will be gained in investigation and treatment of chest and heart conditions.

Form of application from Group Secretary, 44, Cathedral-road, Cardiff.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for post of RESIDENT HOUSE PHYSICIAN in acute medical unit of 64 Beds at St. Margaret's Hospital. Recognised for training under pre-registration internship regulations.

Full details, with names of 3 referees, to Secretary, 7, Okus-road, Swindon, as soon as possible.

TAUNTON AND SOMERSET HOSPITAL, Taunton, SOMERSET. (423 Beds.) HOUSE OFFICERS (general surgery) required, 2 pre-registration posts recognised for F.R.C.S., vacant 30th June, 1958, and 8th July, 1958, respectively.

Applications, stating age, nationality and qualifications, to the Group Secretary, Taunton Hospital Management Committee, c/o Musgrove Park Hospital, Taunton.

TAUNTON AND SOMERSET HOSPITAL. Senior HOUSE OFFICER (anæsthetics) required. Post vacant now. Is recognised for F.F.A.R.C.S. and D.A. A Registrar in Anæsthetics is also employed in the South Somerset Clinical Area, in which the above is the principal general hospital.

Applications, stating age, nationality, experience in anæsthetics (if any), together with the names of 2 referees, to the Group Secretary, Taunton Hospital Management Committee, Musgrove Park Hospital, Taunton, immediately.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (casualty and orthopædic).

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton, Somerset.

TREDEGAR GENERAL HOSPITAL, Tredegar, MONMOUTHSHIRE. HOUSE SURGEON required at above Hospital from 11th July. Commodious family flat available.

Apply to Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach, Hengoed, Glam.

TUNBRIDGE WELLS (near). PEMBURY HOSPITAL, PEMBURY, KENT. (357 Beds.) TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for pre-registration post of HOUSE SURGEON. 6 months' appointment. Vacant now.

Apply, giving details of age, experience and qualifications, to Surgeon-Superintendent.

TUNBRIDGE WELLS (near). PEMBURY HOSPITAL, PEMBURY, KENT. (357 Beds.) TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for pre-registration post of ORTHOPÆDIC HOUSE SURGEON. 6 months' appointment. Vacant now.

Apply, giving details of age, experience and qualifications, to Surgeon-Superintendent.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. (Regional Thoracic Centre.) Applications invited for positions of SENIOR HOUSE PHYSICIAN and SENIOR HOUSE SURGEON. Salary £819 10s. p.a. £150 p.a. charged for accommodation.

Address written applications, giving full personal particulars, details of experience and 2 names and addresses for reference, to W. BOWRING, Group Secretary, Pinderfields General Hospital, Wakefield.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Applications invited for position of SENIOR HOUSE OFFICER in the Neurological Department. Salary £819 10s. p.a. A charge of £150 p.a. is made for accommodation.

Address written applications, giving full personal particulars and details of experience, &c., together with 2 names and addresses for reference, to W. BOWRING, Group Secretary, Pinderfields General Hospital, Wakefield.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Locum Tenens SENIOR HOUSE PHYSICIAN required for the period 17th–31st July, inclusive. Salary £15 19s. per week. Charge for accommodation at the rate of £150 p.a.

Address written applications, giving full personal particulars, details of experience and 2 names and addresses for reference, to W. BOWRING, Group Secretary, Pinderfields General Hospital, Wakefield.

WALSALL HOSPITAL MANAGEMENT COMMITTEE. Manor Hospital, Walsall

PÆDIATRIC HOUSE PHYSICIAN required 1st August, 1958; recognised for D.C.H., also pre-registration.

Applications, together with names of 2 referees, to Group Secretary, Walsall General (Sister Dora) Hospital.

WALSALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments:—

Manor Hospital (340 Beds)
HOUSE PHYSICIAN.

General (Sister Dora) Hospital (181 Beds)
HOUSE PHYSICIAN.

Recognised for pre-registration.

Applications, together with names of 2 referees, to Group Secretary, Walsall General (Sister Dora) Hospital.

WALSALL HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the following appointments:—

Manor Hospital (340 Beds)
HOUSE SURGEON.

General (Sister Dora) Hospital (181 Beds)
HOUSE SURGEON.

Recognised for pre-registration.

Applications, together with names of 2 referees, to Group Secretary, Walsall General (Sister Dora) Hospital.

WARRINGTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (geriatrics) (Male or Female) for active geriatric units at Whitecross Hospital and Aikin Street Hospital, Warrington. Good clinical experience and study time for higher qualifications. Scale of salary £819 10s. p.a., less a deduction of £150 p.a. for residential emoluments.

Applications to be forwarded to HENRY L. BOOT, Group Secretary, c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. Applications are invited from Males and Females for the post of RESIDENT CASUALTY OFFICER (graded as Junior Hospital Medical Officer) at the above Hospital. The post is recognised for the F.R.C.S. Scale of salary £852 10s.–£55–£1182 10s. less a deduction of £170 for residential emoluments. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience and qualifications, should be forwarded to—

HENRY L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

WARWICK HOSPITAL, Lakin-road, Warwick. (284 Beds.) SENIOR HOUSE OFFICER in Anæsthetics required on 1st July, 1958. The post is recognised for D.A. and F.F.A.R.C.S., and is resident.

Applications, with 2 recent testimonials, to be forwarded to the Medical Superintendent.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (211 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. This is a pre-registration post and is recognised for F.R.C.S. Salary according to the National Health Service scale. Post vacant mid-July.

Please send copies of recent testimonials, with applications, to the Administrator.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (211 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade) to the Watford Hospitals. Post vacant 1st July.

Applications, together with copies of not more than 2 recent testimonials, to the Administrator.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (211 Beds.) Applications are invited for the post of HOUSE PHYSICIAN at the above Hospital. Pre-registration post vacant mid-July. Salary in accordance with National Health Service scale.

Please send applications, with copies of 2 recent testimonials, to the Administrator.

WELSH REGIONAL HOSPITAL BOARD.

REGISTRAR in Anæsthetics, based Bridgend General Hospital. Hospital recognised for F.F.A. R.C.S. Resident or non-resident.

REGISTRAR in Thoracic Surgery. Based at Morriston Hospital, Morriston, near Swansea, also expected to serve other hospitals in the district. Unit has 60 Beds and is Thoracic Centre for South West Wales dealing with all types of cardiac and thoracic surgery including tuberculous, non-tuberculous, and œsophageal. Resident or non-resident.

Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WELSH REGIONAL HOSPITAL BOARD. Senior Registrar in Psychiatry, Whitchurch Hospital, Cardiff (835 Beds). Single accommodation available if required. Subject to review end of first year.

Application forms from Senior Administrative Medical Officer, Temple of Peace, Cathays Park, Cardiff, within 14 days.

WEST CUMBERLAND HOSPITAL MANAGEMENT COMMITTEE. JUNIOR HOSPITAL MEDICAL OFFICER in Anæsthetics required for work throughout the West Cumberland Group but based on Whitehaven Hospital. Good experience essential, and possession of the D.A. preferred.

Apply, with full information as to qualifications and experience, and giving the names of 2 referees, to the Group Secretary at Workington Infirmary.

WESTON-SUPER-MARE GENERAL HOSPITAL. (104 Beds.) Applications are invited from duly qualified medical practitioners for the pre-registration appointment of HOUSE SURGEON (resident). Vacancy 15th July, 1958.

Applications, stating age, qualifications, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WESTON-SUPER-MARE GENERAL HOSPITAL. CASUALTY OFFICER (Senior House Officer grade) required at the above Hospital, vacancy 1st July, 1958. The appointment is recognised for F.R.C.S. examinations.

Applications, stating age, qualifications and experience, together with names and addresses of 2 referees, should be addressed to Group Secretary, Weston-super-Mare Hospital Management Committee.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. SENIOR HOUSE OFFICER in Medicine and Pædiatrics.

Applications to Secretary, Royal Albert Edward Infirmary, Wigan.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. HOUSE SURGEON—pre-registration post. Vacant now.

Applications to Secretary, Royal Albert Edward Infirmary, Wigan.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN required, Male or Female, for post vacant 27th July.

Applications, with copies of 3 recent testimonials, stating age, qualifications with dates, and nationality, to Secretary.

WOLVERHAMPTON AND MIDLAND COUNTIES EYE INFIRMARY. SENIOR HOUSE OFFICER required. 100 Beds and busy Outpatient Department. Post vacant 1st July. Recognised for F.R.C.S. and D.O. examinations.

Applications to Secretary, Eye Infirmary, Compton-road, Wolverhampton, as soon as possible.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An associated hospital of the Birmingham University Medical School.) Pre-registration HOUSE OFFICERS (general medicine). Vacancies occur on 2nd and 9th July, and 1st August.

Apply, giving age and qualifications and copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An associated hospital of the Birmingham University Medical School.) Pre-registration HOUSE OFFICER (pædiatrics). Post recognised for D.C.H. Vacant 27th July.

Apply, giving age and qualifications and copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An associated hospital of the Birmingham University Medical School.) Pre-registration HOUSE OFFICERS (general surgery). Vacancies occur 2nd, 9th, and 17th July. All posts recognised for F.R.C.S.

Apply, giving age and qualifications and copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An associated hospital of the Birmingham University Medical School.) ORTHOPÆDIC SENIOR HOUSE SURGEON for Fracture and Orthopædic Department. Post recognised for F.R.C.S. Vacant immediately.

Apply, with 2 testimonials, to the Secretary.

WORCESTER. RONKSWOOD HOSPITAL. Resident ANÆSTHETIST (Senior House Officer status) required mid-August for post which is recognised by the Faculty of Anæsthetists. Duties cover all specialties. Married accommodation available.

Applications, with names and addresses of 3 referees, to be sent to the Hospital Secretary.

WORCESTER ROYAL INFIRMARY AND RONKSWOOD HOSPITAL. HOUSE SURGEON (pre-registration or otherwise) required for General Surgery post which offers wide and varied experience, with outpatient clinics at the Worcester Royal Infirmary (213 Beds) and inpatient work at Ronkswood Hospital (312 Beds). The post is recognised for the F.R.C.S. examinations.

Applications to the Secretary, Ronkswood Hospital, Worcester.

WORCESTER ROYAL INFIRMARY. (213 Beds.) Locum SENIOR HOUSE OFFICER (medical) required for Resident Medical Officer's duties from 4th to 18th July, 1958.

Applications to Hospital Secretary.

WORCESTER ROYAL INFIRMARY. House Surgeon (pre-registration or otherwise) required immediately for Orthopædic Department of this busy general hospital of 213 Beds. The appointment offers wide and varied experience.

Applications to Hospital Secretary.

WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of REGISTRAR in Pathology, vacant 11th September, 1958. This is a Group appointment with duties at the 2 main Hospitals, Southlands Hospital (411 Beds) and Worthing Hospital (210 Beds).

Forms of application are available from the undersigned.

A. V. OAKTON, Group Secretary.
129, Brighton-road, Worthing, Sussex.

WREXHAM. WAR MEMORIAL HOSPITAL. (230 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Orthopædic Department of the above Hospital. The post is a residential one and affords particular facilities for postgraduate study. Successful applicant will be allowed to attend for 2 days a month at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry. The Hospital is recognised for the Diploma of F.R.C.S. (England, Edinburgh, and Ireland).

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, to be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) Applications are invited for the post of PÆDIATRIC HOUSE PHYSICIAN at the above Hospital, to commence 1st August, 1958. The appointment is recognised for the D.C.H. and for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, Denbighshire.

WREXHAM. MAELOR GENERAL HOSPITAL (591 Beds) and WAR MEMORIAL HOSPITAL, WREXHAM (230 Beds). Applications are invited for HOUSE PHYSICIAN posts at the above Hospitals, to commence 1st August, 1958. The appointments are recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, Denbighshire.

WREXHAM. MAELOR GENERAL HOSPITAL (591 Beds) and WAR MEMORIAL HOSPITAL, WREXHAM (230 Beds). Applications are invited for HOUSE SURGEON posts at the above Hospitals, to commence duties on 1st August, 1958. The appointments are recognised for the Diploma of F.R.C.S. (England, Edinburgh, and Ireland) and are pre-registration posts.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, as soon as possible.

WREXHAM (near). TREVALYN MANOR MATERNITY HOSPITAL, ROSSETT, near WREXHAM. (47 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence duties on 1st September, 1958. The Hospital is a Part II Midwifery Training School and deals with normal and abnormal midwifery.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

YEOVIL GENERAL HOSPITAL, Somerset. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER (medicine and casualty). Yeovil Hospital is the main acute general hospital in the Group, and calls for good experience.

Applicants should state their age, experience and qualifications, together with the names of 3 referees, which should be sent to the Group Secretary, South Somerset Hospital Management Committee, 71, Higher Kingston, Yeovil.

NORTHERN IRELAND HOSPITALS AUTHORITY. SOUTH TYRONE HOSPITAL, DUNGANNON. Applications are invited for the posts of SENIOR HOUSE OFFICERS (2), Medical, at the South Tyrone Hospital, Dungannon, Co. Tyrone. The salary attaching to the posts will be £819 10s. A charge of £150 p.a. will be made for accommodation and services provided.

Applications, stating age, qualifications and experience, and the names of 2 persons to whom application may be made for a confidential report, should be sent immediately to the Secretary, South Tyrone Hospital, Dungannon, Co. Tyrone.

CANADA. OAKVILLE-TRAFALGAR MEMORIAL HOSPITAL. Reynolds and Division Streets, OAKVILLE, ONTARIO, CANADA. HOSPITAL INTERNSHIPS open to emigrating British physicians. 1 required for July (6-month contract) and 1 for January (6-month contract). Above average remuneration and opportunity to prepare for council licensing examinations.

Inquire to Administrator.

CANADA. REGINA GENERAL HOSPITAL, Regina, SASKATCHEWAN. The following vacancies exist for appointments in an 800-Bed hospital, all services very active:—

(1) JUNIOR ROTATING INTERNSHIPS, stipend $150 per month, plus full maintenance.

(2) ASSISTANT-RESIDENTS in Pathology, stipend $200 per month, plus full maintenance.

(3) ASSISTANT-RESIDENTS and RESIDENTS in Surgery, stipend at the rate of $200 per month for Assistant-Residents and $250 per month for Residents, plus full maintenance.

Apply: Superintendent, Regina General Hospital, Regina, Saskatchewan, Canada.

NEW YORK. NEW ROCHELLE HOSPITAL, New ROCHELLE, NEW YORK, U.S.A. (383-Bed general community hospital.) Approved by the Joint Commission on Accreditation of Hospitals. Also approved by the American College of Surgeons and American Medical Association for Internship and Residency training. Only graduates from approved university schools accepted. Internships available for the 1-year term commencing 1st July, 1958. Stipend is $200 per month plus complete maintenance.

Apply Superintendent.

Public Appointments

DERBYSHIRE COUNTY COUNCIL. County Health DEPARTMENT. MATERNAL AND CHILD WELFARE MEDICAL OFFICER (Female). Applications are invited from fully qualified medical practitioners for this whole-time superannuable post. Candidates should be experienced in antenatal work, midwifery, and children's diseases, as they will be required to hold consultations at the Council's Maternity and Child Welfare Clinics and Centres, and to perform such other duties as may be required. Salary £1050–£50–£1200–£55–£1475 p.a., plus a car allowance.

Particulars and application forms are obtainable from Dr. J. B. S. MORGAN, County Medical Officer, County Offices, Matlock, and should be returned to him duly completed not later than 14th July, 1958.

DERBYSHIRE COUNTY COUNCIL. County Health DEPARTMENT. ASSISTANT MATERNAL AND CHILD WELFARE MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER. Applications are invited from registered medical practitioners for a whole-time superannuable post in the East of Derbyshire. Salary, £1050–£50–£1200–£55–£1475 p.a. Car allowance.

Particulars and forms of application are obtainable from Dr. J. B. S. MORGAN, County Medical Officer, County Offices, Matlock, to whom they should be returned by 30th June, 1958.

DURHAM COUNTY COUNCIL. Health Department. ASSISTANT MATERNITY AND CHILD WELFARE MEDICAL OFFICER. Applications are invited from registered medical practitioners (Female). Commencing salary £1050 p.a., rising by annual increments of £50 and £55 to £1475. Travelling expenses will be paid in accordance with the scale approved by the Whitley Council.

The appointment is subject to certain conditions, particulars of which may be obtained from the County Medical Officer of Health, Shire Hall, Durham, to whom applications, together with the names of not more than 3 referees, should be sent. Canvassing members of the Council is prohibited.

J. K. HOPE, Clerk of the County Council.

MIDDLESEX COUNTY COUNCIL. County Health DEPARTMENT. SENIOR ASSISTANT MEDICAL OFFICER (Male) required initially in Area 6 (Wembley and Willesden). Whole-time for administrative and clinical work. Approval by Minister of Education for ascertainment of educationally subnormal children desirable. Diploma in Public or Child Health advantage. Required to act as Deputy Medical Officer of Health for Borough of Willesden for 40% of whole-time. Salary as for mixed appointments, £1693 13s. 4d.–£2058 13s. 4d. Established, subject to medical assessment. Prescribed conditions.

Apply, stating age, qualifications, experience, and names of 2 referees, to Joint Area Medical Officers, 215, Chevening-road, Kilburn, N.W.6, by 5th July. (Quote X.620 L.) Canvassing disqualifies.

MIDDLESEX COUNTY COUNCIL. County Health DEPARTMENT. ASSISTANT MEDICAL OFFICER (Male or Female) required in Area 8 (Hayes/Harlington, Ruislip-Northwood, Uxbridge, Yiewsley/West Drayton). Duties mainly in connection with supervision of health of mothers and young children attending infant welfare centres, toddlers clinics and day nurseries, routine medical inspections at schools and attendance at minor ailments treatment clinics for schoolchildren. Experience in dental anaesthesia and ascertainment of educationally subnormal children desirable. Salary £1050–£50 (3)–£55 (5)–£1475 p.a. inclusive. Established, pensionable, subject to medical assessment. Prescribed conditions.

Apply (no forms), with names of 2 referees, to Area Medical Officer, Local County Offices, High-street, Uxbridge, Middlesex, by 19th July. (Quote X.673 TL.) Canvassing disqualifies.

ROSS AND CROMARTY. COUNTY COUNCIL. Public HEALTH DEPARTMENT. Applications are invited for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH, principally for school medical inspection duties. Salary commencing at £1050 and rising by annual increments of £50-55 to £1475 with placing according to experience. The successful applicant must provide a motor car for which mileage allowance will be paid in accordance with the County Council scale. Further information, if desired, can be obtained from the County Medical Officer of Health, Public Health Department, Dingwall.

Applications, accompanied by 3 copies thereof, and of recent testimonials, to be lodged with the undersigned not later than 21st July, 1958. Canvassing directly or indirectly will be a disqualification.

W. D. ROSS, County Clerk.

County Buildings, Dingwall. June, 1958.

YORKSHIRE. COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE. Joint Appointment of SENIOR ASSISTANT COUNTY MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER to the Castleford Corporation, Normanton Urban District Council and the West Riding County Council. Applications invited from registered medical practitioners with at least 3 years' experience since qualification, and holding the D.P.H. or nearing completion of training for the D.P.H. Duties mainly in the School Health and Infant Welfare Services but in addition person appointed will be required to act for the Divisional Medical Officer and Medical Officer of Health in his absence, and will be appointed Deputy Medical Officer of Health to the constituent authorities. Salary £1150–£1575 p.a. County Council scale of travelling and subsistence allowances. Post superannuable and subject to medical examination.

Forms of application from the undersigned to be returned not later than 12th July, 1958.

J. LEIPER, Deputy County Medical Officer.

County Hall, Wakefield.

YORKSHIRE. COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE. Appointment of ASSISTANT COUNTY MEDICAL OFFICER AND SCHOOL MEDICAL OFFICER, Harrogate (No. 8) Division. Applications invited from registered medical practitioners with at least 3 years' experience since qualification. Duties mainly in School Health and Infant Welfare Services. Salary £1050–£1475 p.a. County Council scale of travelling and subsistence allowances. Post superannuable and subject to medical examination.

Forms of application from the undersigned to be returned not later than 12th July, 1958.

J. LEIPER, Deputy County Medical Officer.

County Hall, Wakefield.

THE NIGERIAN RAILWAY CORPORATION invites applications for the post of MEDICAL OFFICER.

Duties: A Medical Officer will be required to work at a Railway District Hospital and or Dispensary and to be responsible to the District Medical Officer for the medical and surgical care of the staff of the Corporation and their families, with such administrative and Public Health duties as pertain to effective Railway working.

Qualifications: Candidates must be legally qualified practitioners entitled to practise in Great Britain and possess good clinical experience. Additional postgraduate medical qualifications and medical administrative experience, preferably in the tropics, will be considered an advantage but not essential. Candidates must have been qualified for a minimum period of 7 years except that holders of an F.R.C.S. or an M.R.C.P. who have been qualified not less than 5 years can be considered. Candidates with less experience can be considered for appointment in a lower salary scale.

Salary: In scale £1875–£50–£2075 p.a. (inclusive of overseas pay). Starting salary according to qualifications and experience. Appointments may be on pensionable terms or on contract with a gratuity payable on completion of contract at the rate of £31 5s.–£34 11s. 8d. for each completed month of service.

Tours: 15 months in Nigeria followed by 15 weeks' leave on full pay.

Quarters: Partly furnished quarters are provided at low rental.

Allowances: There are attractive family, travelling, transport and other allowances.

Send postcard before 25th July, 1958, mentioning the post and this paper for further particulars and application form to: The London Representative, Nigerian Railway Corporation, Nigeria House, 9, Northumberland-avenue, London, W.C.2.

DUBLIN. Local Appointments Commission. Vacancy for an Anæsthetist. ANÆSTHETIST (part-time), Kildare County Council. Basic salary £809. Additional payment for attendance exceeding 15 hours a week. Essential qualifications include (*a*) a recognised diploma in anæsthetics or equivalent and (*b*) adequate experience in the administration of anæsthetics.

Application forms and further particulars from the Secretary, 45, Upper O'Connell-street, Dublin. Latest time for receiving completed application forms: 5 P.M. on 11th July, 1958.

SOUTH CORK BOARD OF PUBLIC ASSISTANCE. Vacancy for RESIDENT HOUSE SURGEON (registered) at St. Mary's Orthopædic Hospital. Remuneration £502 10s. 6d. p.a.

Application forms and particulars may be obtained from the County Manager, Courthouse, Cork, with whom completed applications should be lodged not later than 5 P.M. on Tuesday, 15th July, 1958.

GOVERNMENT OF KENYA. Medical Officers with qualifications registrable in United Kingdom required for general duties. Successful candidates may be posted to any station in Kenya. During earlier years of service an Officer will be expected to carry out general medical and surgical duties including varying amount of public-health administration. In most stations, even if remote from the larger towns, it is possible to maintain interest in any particular branch of medicine or surgery, to which the Officer is attracted. The work of every Medical Officer is based on a hospital which may vary in size and facilities from small district hospital, meeting needs of comparatively primitive community, to large and modern provincial hospital. 1 vacancy is for a Casualty Officer at King George VI Hospital, Nairobi. Candidate with bias for surgery required. There is also an urgent requirement for a Physician to work in 1 of the major hospitals in Kenya. M.R.C.P. desirable. Appointments can be made on permanent basis with pension (non-contributory), or on short-term contract with gratuity (taxable) payable on satisfactory completion of service. Salary ranges from £1284 to £2115 a year, starting-point determined by experience. 4 extra increments given to successful candidates possessing F.R.C.S., M.R.C.P., D.P.H., or other approved higher qualifications. Permanent Medical Officers become members of Her Majesty's Overseas Civil Service and are eligible to be considered at any time for promotion to super-scale posts in Kenya and other territories in medical administration or, if they possess higher qualification and suitable experience, in specialist posts. Quarters when available at rental varying from £30 to £78 a year according to size and type, and furniture at rate varying from £15 to £36 a year. Free passages in both directions for Officer and wife, and up to cost of 1 adult fare for children. Taxation at local rates. Annual local leave permissible and generous home leave granted after each tour of from 24 to 45 months. Educational facilities available.

Application forms from Director of Recruitment, Colonial Office, Great Smith-street, London, S.W.1 (quoting BCD. 117/7/02).

GOVERNMENT OF THE NORTHERN REGION OF NIGERIA. Applications invited for the following posts. Candidates must possess medical qualifications registrable in the United Kingdom:—

PATHOLOGIST to carry out supervision of a district laboratory, general pathological work and training of Laboratory Technicians. 1 year's general pathological experience obtained in Pathology Department of a hospital essential. A higher qualification (e.g. D.C.P., D.P. or Dip. Bact.) an asset.

MEDICAL OFFICER OF HEALTH for administration of preventive medical service and control of sanitary matters (including statutory duties of a Medical Officer of Health), or if posted to an airport the duties of Port Health Officer. May be required to perform general duties of Medical and Health Officers and other duties in connection with epidemic diseases. Possible posting to undertake rural health work including medical surveys and mass treatment of endemic diseases. D.P.H. essential. Diploma in Tropical Hygiene asset.

Appointments may be:—

(*a*) On 3 years' probation for permanent and pensionable employment. Pension (non-contributory) at rate of 1/600th of final pensionable emoluments for each completed month of reckonable service.

(*b*) From National Health Service, officers retaining superannuation rights up to 6 years and receiving a gratuity (taxable) of 20% of aggregate of salary. Salary for Officers appointed under (*a*) or (*b*) ranges from £972 to £1650 p.a., plus pensionable inducement addition ranging from £240 to £300 p.a., or

(*c*) On short-term contract (2 tours each of 18–24 months) with salary £1164–£1986 plus inducement addition as at (*b*) and gratuity (taxable) of £37 10s. for each completed period of 3 months' service (including leave).

Quarters provided at low rental. Taxes at local rates. Annual leave permissible; generous home leave granted after each tour. Free passages in both directions for Officers and wives; assisted passages for children. Allowances for children of £120 a year for first child, £96 for second, and £72 for third.

The Office of the Northern Region of Nigeria, Nigeria House, Northumberland-avenue, London, W.C.2, would be pleased to answer questions relating to conditions of service, climate, &c., in the Region.

Application forms from Director of Recruitment, Colonial Office, London, S.W.1 (quoting BCD.117/408/029).

Hospital Services: Non-Medical Appointments

EDINBURGH NORTHERN GROUP OF HOSPITALS. Applications are invited for the post of BIOCHEMIST to conduct research in the field of rheumatic diseases. Medical qualification not essential. Salary £1000–£1200 p.a., in accordance with qualifications and experience. Appointment for 1 year in the first instance, subject to renewal.

Applications, with names of 2 referees, to the Director, Rheumatic Unit, Northern General Hospital, Ferry-road, Edinburgh, 5.

General Practice

For an ***Executive Council post*** *(England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."*

BRIGHTON (Queen's Park District). Intermediate Area. Applications invited for retirement (30th September, 1958) VACANCY. Residence with surgery available. List approximately 1700 (Brighton 1650, East Sussex 50). Apply on Form E.C.16A to reach the undersigned not later than 14th July, 1958.

W. HOLDEN, Clerk, Brighton Executive Council.
26, Bond-street, Brighton 1.

COLCHESTER, ESSEX. Applications invited for retirement VACANCY. (Mixed Urban and Rural—Intermediate area.) List at present approximately 1240. Residence and surgery accommodation may be available by purchase. Apply on Form E.C.16A by first post on 11th July, 1958, to:

E. BERGDAHL, Clerk of the Council.
Essex Executive Council, 131/3, Fillebrook-road, Leytonstone, E.11.

MYTHOLMROYD, YORKSHIRE. Applications are invited for VACANCY (Urban and Rural). List at present approximately 1335. Residential and main surgery accommodation available for purchase. Appointed successor required to commence on 1st October, 1958. Apply on Form E.C.16A to the undersigned, from whom further particulars may be obtained, not later than 5th July, 1958.

C. H. STABLER, Clerk, West Riding Executive Council.
5, St. John's North, Wakefield.

RHOSLLANERCHRUGOG, near Wrexham, Denbighshire. Applications invited for VACANCY (Urban and Rural) due to resignation. List approximately 2078. Apply on Form E.C.16A not later than 5th July, 1958, to:—

TUDOR WILLIAMS, F.C.I.I.,
Clerk of Denbighshire and Flintshire Executive Council.
11, Grosvenor-road, Wrexham.

Extensive hospital, G.P., and Service experience. Pleasant colleague, hard worker seeks Partnership in Greater London with principal contemplating retirement. £10,000 available for house. —Address No. 410, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Miscellaneous

The Babies' Club, Chelsea, an infant welfare centre for subscribers, has a vacancy for a Medical Practitioner interested in child health to take 1 weekly afternoon consultation from 2 to 5 P.M. at a honorarium of £2 7s. 3d. per clinic.—Applications, with details of qualification and experience, to the Secretary, 35, Danvers-street, S.W.3.

Medical Officers required by Falkland Islands Dependencies Survey for tour of 30 months in Antarctic bases. Unique opportunity for research on polar physiology; suitable candidates will be given research training at Division of Human Physiology, National Institute for Medical Research, London. To leave U.K. October, 1958. Salary £625 a year. Free passages, quarters, messing and canteen stores. Liberal leave on full salary. Candidates must possess qualifications registrable in United Kingdom. Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience, and quote M3C 44633 LD.

Physicians trained in diseases of the chest or holding an M.R.C.P. degree or equivalent who might be interested in sanatorium or chest clinic work in the Province of Ontario, Canada, are invited to apply to Ontario House (attention Mr. H. G. Donaldson), 12, New Burlington-street, London, W.1, for information regarding opportunities. Salary range $5000–$8000, depending on experience. Applications must be in by 10th July so arrangements may be made for interview.

Required. Registrars or Senior House Physicians under age 35 with either 3 or more years' training in medicine or 3 or more years' training in pædiatrics interested in moving permanently to areas in and near New York City for opportunities to practise in medical groups. Beginning annual salary $10,000, including loans for transportation if needed. Full details at interviews in London 1st, 2nd, and 3rd July, with physician from New York.—Make appointments through Sir ALLEN DALEY, 24, Edith-road, London, W.14.

MICROBIOLOGIST

Required by:
LEDERLE LABORATORIES DIVISION,
CYANAMID OF GREAT BRITAIN LIMITED

There is a vacancy at our Gosport plant for a Microbiologist with a degree in either bacteriology or microbiology, preferably with previous experience, but this is not essential as training will be given to the successful applicant.

Work involves antibiotic assays, sterility testing and vitamin assays of pharmaceutical, surgical, and veterinary products.

Hours of work, 9 A.M.–5.15 P.M., Monday–Friday.

There is a pension scheme.

Fully detailed applications, which will be acknowledged, should be addressed to the Personnel Manager, Lederle Laboratories Division, Cyanamid of Great Britain Ltd., Fareham-road, Gosport, Hants.

Doctors requiring applications, theses copied: Write to MANTON (WESTMINSTER) LTD., 98, Victoria-street, S.W.1 (VIC. 0141), who are specialists.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimens of urine and £2 2s. fee. Hæmatology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

Part-time Consulting Rooms to be Let in Harley-street. Rents from £50 per half-day session. Apply: ELLIOTT, SON AND BOYTON, 86/87, Wimpole-street, London, W.1. WEL. 8367.

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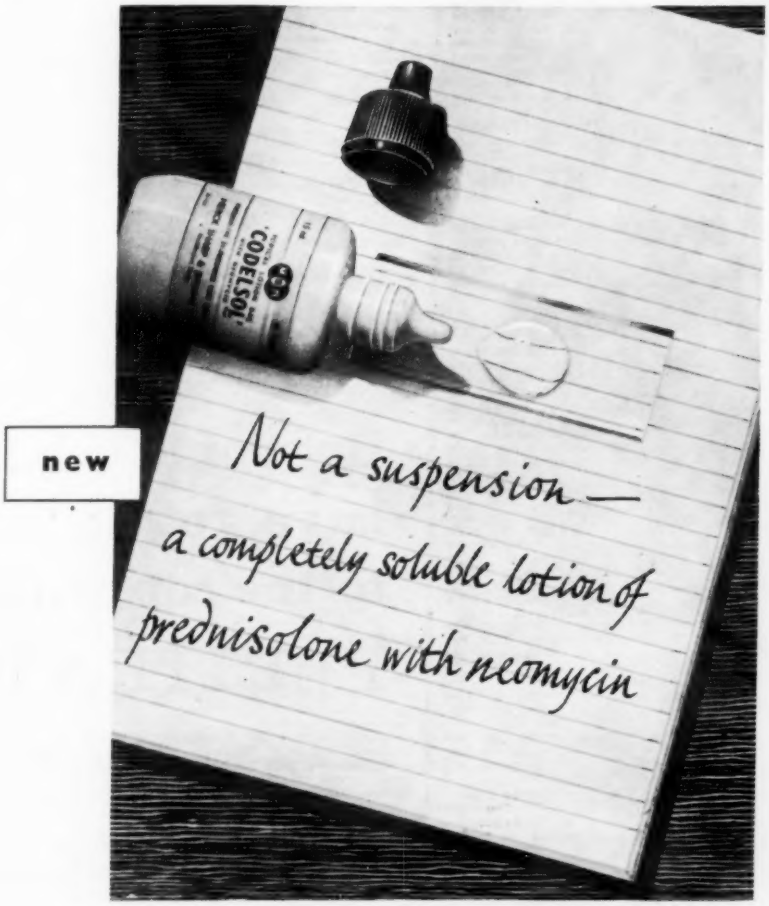

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'Codelsol' Skin Lotion contains the highly potent steroid, prednisolone, in its most active form together with the clinically reliable antibiotic, neomycin.

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'Codelsol' Skin Lotion is most acceptable to the patient since it does not stain, smell or show.

How supplied: 'Codelsol' Skin Lotion with Neomycin is available in 15 ml. plastic squeeze bottles. Please specify SKIN LOTION when prescribing.

The basic N.H.S. cost is 16/- per 15 ml. bottle. *Literature gladly supplied on request.*

Prednisolone 21-phosphate is 2,000 times more soluble than hydrocortisone

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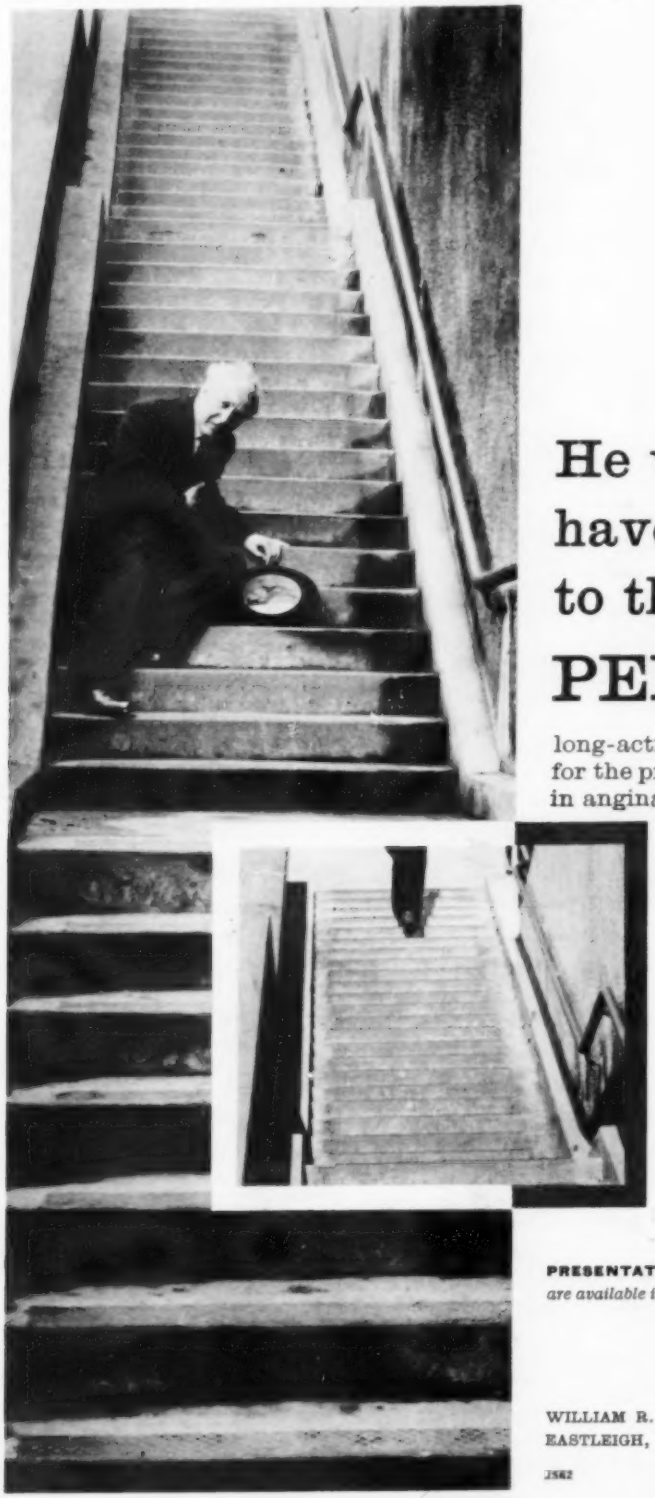

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in angina of effort

Peritrate gives extra protection against angina of effort. The basic prophylactic dose of Peritrate is one or two tablets four times a day. But one tablet taken half an hour before exertion gives extra protection for stair climbing, walking and the daily rush to and from work. Up to ten extra Peritrate tablets may safely be taken in 24 hours.

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